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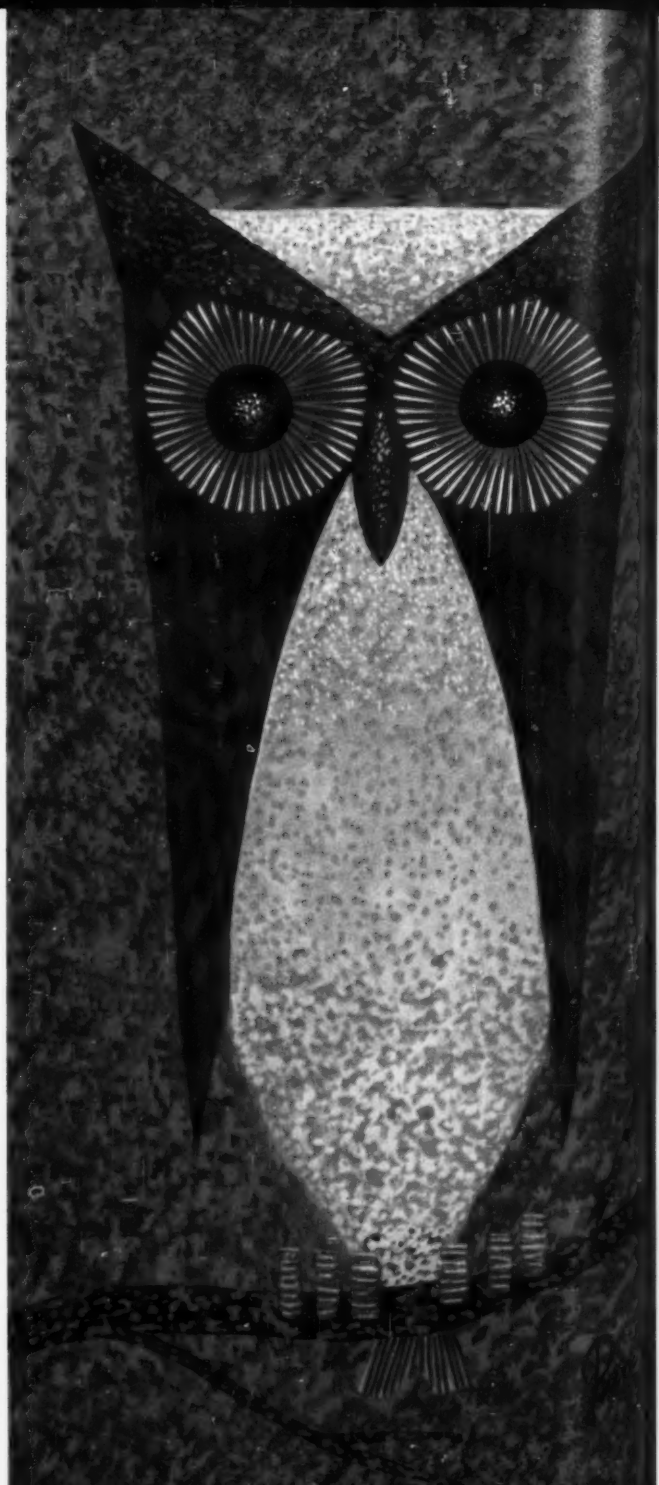

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THINKS AHEAD WITH TEXTILES

Proceedings of the
American Association of Textile Chemists and Colorists

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December 26, 1960 No. 26

Northern New England Section——

THE PERMANENT SETTING OF WOOL*

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A brief review is made of the evidence for believing that permanent set in wool fibers results from the rearrangement of hydrogen bonds following the scission of some disulfide bonds. The application of this work to obtain permanent creasing and pleating of pure wool garments and washable "non-iron" wool fabrics is described.

INTRODUCTION

At the First International Wool Textile Research Conference, held in Australia in 1955, considerable emphasis was given to the need for practical methods which would permanently crease and pleat pure wool garments. The conditions for setting wool, which were defined by Professor Speakman and his colleagues in 1936 (*1*), could have been used to permanently pleat skirts had the clothing industry chosen to apply them. However, these methods were too time-consuming to be useful in the permanent creasing of trousers, where very short processing times are normally used to impart the crease. The Geelong Wool Research Laboratory of the Commonwealth Scientific and Industrial Research Organization, Australia, began a research program to further investigate the chemical mechanism of permanent set, with a view to finding rapid methods for setting creases in all-wool garments.

As a result of this work (*2*), it was concluded that permanent set (which is defined as the elongation, stable after boiling relaxed in water for one hour, when strained fibers are subjected to some setting treatment) results from the rearrangement of hydrogen bonds following the scission of some disulfide bonds. The following are the major observations which led to this conclusion.

1) Wool fibers in which all the disulfide bonds have been permanently broken by successive reduction and methylation can be more easily set in boiling water than can untreated fibers. The former take an immediate set without exhibiting the phenomenon of super-contraction usually observed when extended fibers are steamed for short times (See Figure 1).

2) The set imparted to reduced/methylated wool fibers is completely destroyed by hydrogen bond-breaking agents, such as formic acid or concentrated solutions of lithium bromide (Table I). Normal fibers set with water, soduim borate or sodium bisulfite also lose their set when treated with hot formic acid or lithium bromide, although the former reagent at room temperature causes only a partial release (Table II). Lithium bromide causes marked supercontraction in all cases.

3) Normal fibers set in water or steam lose their set when steamed at a higher temperature, but can then be reset at the same, or higher, temperature.

TABLE I

Setting of untreated and modified wools in water followed by release in formic acid and lithium bromide

Fibers set in boiling water for one hour, released in boiling water for one hour, and then in formic acid (98-100%, 30 minutes, 20°C) or lithium bromide solution (7 M, 80°C, one hour)

Treatment, set and released in	*Change in length, % of original* Untreated	Reduced/methylated
Boiling H_2O	+22	+25
Boiling H_2O followed by formic acid	+16	−20
Boiling H_2O followed by lithium bromide	−31	−20

TABLE II

Setting of untreated fibers in water, sodium borate, and sodium bisulfite followed by release in boiling water and then formic acid or lithium bromide

Fiber set at 100°C in water for one hour, 2% sodium borate for one hour, or 2% sodium bisulfite for 15 minutes, released in boiling water for one hour, then in formic acid (98-100%, 30 minutes, 20° and 80°C) or lithium bromide solution (7 M, 80°C, one hour).

	Change in length (% of orginal) after final release in			
		Formic Acid		Lithium
Setting medium	*Water*	*20°C*	*80°C*	*bromide*
Water	+24	+16	+3	−31
Sodium borate	+26	+13	+2	−20
Sodium bisulfite	+33	+24	+10	−17

*Presented before the Northern New England Section at Lexington, Mass, October 16, 1959.

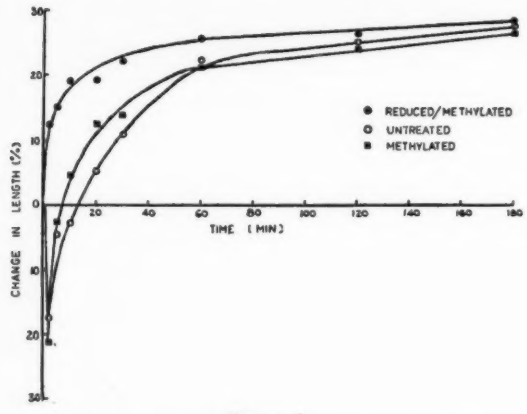

Figure 1
Fibers set in water at 100°C and 40% extension for various times, then released in water at 100°C for one hour

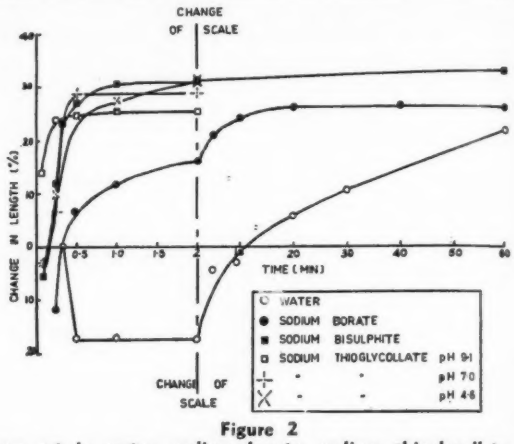

Figure 2
Fibers set in water, sodium borate, sodium thioglycollate, or sodium bisulfite at 100°C and 40% extension for various times, then released in water at 100°C for one hour

4) Investigations of the rate of setting in boiling solutions of various reagents show that reducing agents, which are capable of giving rapid breakdown of disulfide bonds, impart a high degree of permanent set in very short times (Figure 2). Of particular importance is the fact that thioglycollates, which give rise to two thiol groups without any possibility of rebuilding new covalent bonds, are very effective setting reagents. Reoxidation of the thiol groups to new disulfide bonds is not responsible for the effect, because fibers set in thioglycollate solutions and released in the same medium without removal show a similar high degree of set.

These results cannot be explained in terms of the rebuilding of new covalent bonds between peptide chains to stabilize fibers in the set condition. However, they are readily explained by rearrangement of hydrogen bonds following the breakdown of some disulfide bonds. It should be possible, therefore, to set fibers at low temperatures by subjecting them to the combined action of a reagent capable of breaking disulfide bonds and one capable of rearranging hydrogen bonds. Figures 3 and 4 show that this is indeed the case, solutions of reducing agents containing urea giving a high degree of permanent set in short times at 30°C when sufficient urea is present to impart strong hydrogen bond-breaking properties to the solution.

Table IV shows that neither reagent individually is capable of setting wool fibers under these conditions.

This explanation of the mechanism of setting has been confirmed by studies of some of the properties of fibers during setting and supercontraction (3).

TABLE III

Alternate setting and releasing of fibers in water or steam at various temperatures

Times of initial setting, release, resetting, and second release, one hour in each case.

Setting temp, °C	*Temp of release, °C*	*Change in length, % of original*	*Resetting temp, °C*	*Temp of release, °C*	*Change in length, % of original*
100	120	−10	100	100	+14
90	110	−10	90	90	+12
90	110	− 8	110	110	+18
90	110	− 9	110	100	+23

TABLE IV

Control experiments on setting extended fibers in urea—sodium metabisulfite

All treatments carried out at 30°C and 40% extension. Fibers released in water at 100°C for one hour after rinsing in running water.

Treatment	*Time, minutes Setting*	*Rinsing*	*Change in length, % of original*
50% (w/v) urea	15	15	nil
1.6% (w/v) $Na_2S_2O_5$	15	15	−4
" "	60	15	−4
" "	15	45	−4
" "	60	45	−7
5% (w/v) $Na_2S_2O_5$	15	15	−4
" "	60	15	−5
" "	15	45	−4
" "	60	45	−8
Unextended fibers in:			
a) 50% (w/v) urea + 5% (w/v) $Na_2S_2O_5$ for 15 minutes			nil
b) 50% (w/v) urea + 5% (w/v) $Na_2S_2O_5$ for 60 minutes			−2

SI-RO-SET PROCESS

Trouser manufacturers in Australia had expressed their interest in a permanent creasing process, provided it was cheap to apply, did not involve extensive new plant or costly modifications, and did not require longer processing times than 30 seconds. The work described above showed reducing agents to be extremely rapid and efficient setting agents for wool fibers, and suggested the possibility of meeting clothing manufacturers' restrictions by applying solutions of reducing agents prior to steam pressing. Experiments with a variety of reducing agents showed that creases of excellent durability could be imparted to wool fabrics provided that

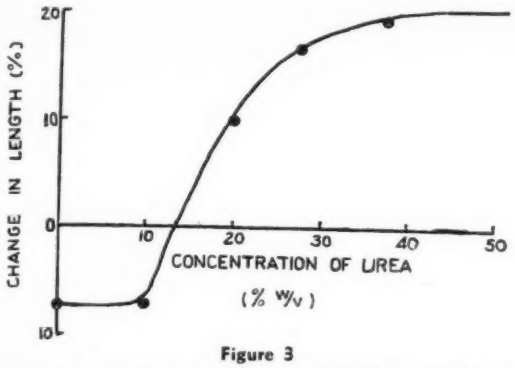

Figure 3
Fibers set in solutions of sodium metabisulfite (1.6% w/v) and urea (various concentrations) at 40% extension and 30°C, followed by release in water at 100°C for one hour

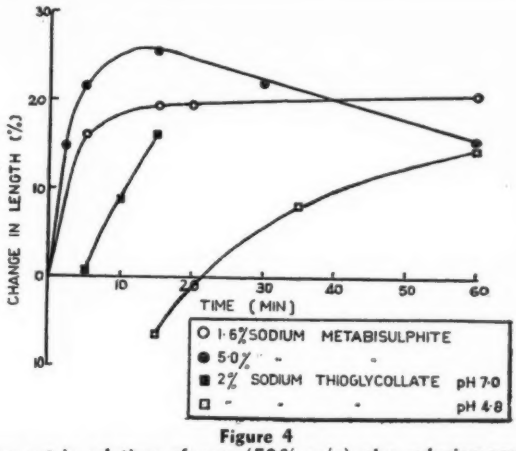

Figure 4
Fibers set in solutions of urea (50% w/v) plus reducing agents at 40% extension and 30°C, followed by release in water at 100°C for one hour

a) the reducing agent was present at the time of heating,
b) free water was present at the time of heating, and
c) heat was applied for at least 30 seconds.

Obviously these requirements could be met, either by the trouser manufacturer applying a solution of reducing agent to the garment before pressing, or by supplying the manufacturer with fabric containing a reducing agent and applying water to the garment prior to pressing. The latter procedure would involve the finisher in extra processing, and would necessitate low-temperature drying after application of the reducing agent to prevent the setting reaction from taking place prematurely. These considerations, coupled with the fact that the garment manufacturer can just as easily apply a solution of a reducing agent as water, led us to adopt the former technique, ie, application of a reducing solution by the garment manufacturer, in developing a practical method for permanent creasing. The ideal method, of course, would be to supply to the garment manufacturer a fabric which he could treat by normal production methods and obtain permanent creases, but factors "a" and "b" above preclude this possibility.

Extensive trials showed that application of solutions of reducing agents to garments, followed by longer steaming times, could be incorporated into the production methods of garment manufacturers without creating too many difficulties, and it was decided to invite several clothing manufacturers to experiment with the method on a production basis. Before doing so, however, it was necessary to decide which reducing agent should be used for such an industrial process. From a wide range of suitable reagents, ammonium thioglycollate at pH 7 was chosen for the following reasons:

1) the single-fiber work showed this reagent to be a little faster than most others,
2) its reaction with wool is specifically with disulfide bonds,
3) a reagent at pH 7 is less likely to have unwanted side effects than acid or alkaline conditions, and
4) it would be possible to utilize the facilities already existing in connection with women's hairdressing for the supply of concentrated solutions of reagent requiring only dilution with water to be ready for use.

There were two major disadvantages with this reagent—relatively high cost and discoloration of the solution in the presence of traces of iron. The first objection was not valid as the cost of reagent was found to be of the order of only sixpence per pair of trousers, while the discoloration with iron could be overcome by using nonferrous spray equipment.

This basic technique—spray application of a limited quantity of dilute ammonium thioglycollate solution at pH 7 immediately before steam heating—was used by several clothing manufacturers under production conditions, and following favorable reports, was released generally to industry as the Si-Ro-Set process (4).

As would be expected with a process of this type, many problems arose in full-scale production, most of which were overcome without too much difficulty. Although a discussion of such matters is beyond the scope of this lecture, it is perhaps necessary to mention that the major problem was alteration of shade by reduction of dyes. Tests were carried out on a large range of commercial fabrics and showed about 20% to be affected, so that it was necessary for manufacturers to assess, by trial, stability of any fabric to the treatment before going into production. The situation is now very much better, as several of the leading dye manufacturers have published tables giving fastness figures for their wool dyes towards Si-Ro-Set. It is interesting to note that claims to the effect that this treatment is more severe than sulfur stoving in its effect on dyes are not borne out by comparing the fastness figures for the two processes. Of a total of 518 colors for which figures have been published, 61% show equal fastness to Si-Ro-Set and stoving, 20% show better fastness to Si-Ro-Set than to stoving, and 19% are faster to stoving than to Si-Ro-Set.

The process has been taken up in most countries with garment manufacturing industries of any magnitude, though the extent to which it is used varies considerably. Reasonably large numbers of garments are being processed in Japan, New Zealand and Australia, while the treatment is being used on a more limited scale in the United States, the United Kingdom and Europe.

WASHABLE "NON-IRON" WOOL FABRICS

In recent years, garments manufactured from synthetic fibers have been

able to retain their appearance after laundering to such an extent that they can be worn without ironing. This has led to the development of an entirely new field of textiles known as "wash-and-wear," "minimum-care," "non-iron" and various other titles. Research on resin finishing of cotton has led to the very successful performance of cotton fabrics in this field, and there has been a demand for similar effects in pure wool fabrics.

In addition to the normal fabric properties required for satisfactory garment performance (comfort, wrinkle resistance and recovery, ease of removal of soil, colorfastness, strength, tailorability, etc, all of which are possessed by wool), the major requirements for a washable "non-iron" garment are dimensional stability and retention of appearance on laundering, and it is in these properties that wool fails badly. Dimensional stability in the case of wool requires some treatment to prevent both relaxation shrinkage and felting shrinkage, while retention of appearance necessitates some setting process to prevent the development of mussiness and wrinkles which normally occur when wool fabrics are laundered. A study of these various factors at the Geelong Laboratory has led to a process for producing washable "non-iron" wool fabrics (5).

FELTING SHRINKAGE —— A great variety of methods have been published for preventing felting shrinkage in wool, but very few have been used commercially to any extent. Chlorination procedures have received the greatest acceptance, mainly because of their low cost, but these suffer from the disadvantages of having an adverse effect on color and handle and requiring strict conrol for satisfactory results.

Our work at Geelong showed that, in addition to its antifelting effect, the shrinkproofing treatment played an important role in obtaining the maximum effect from the setting treatment. Hence, although any shrinkproofing treatment can be used in connection with washable "non-iron" finishes, it must be capable of giving a high degree of shrinkage resistance.

McPhee (6) has published details of an excellent method which gives an adequate degree of felting resistance, without any adverse effect on the fabric and which requires very little control. The method is based on the effect of concentrated sodium chloride solutions in protecting wool from degradation (7) and involves treatment with potassium permanganate in such salt solutions, followed by a clearing treatment with sodium bisulfite. No analyses are required on the reagents used or on the shrinkproofing liquors. The permanganate treatment is finished when the pink color of the solution has disappeared, and the clearing treatment is over when all residual manganese dioxide has been removed from the wool. For economy, the salt solution should be used as a standing bath and this has raised no difficulties in practical trials where the same bath has been used for ten consecutive treatments. Between 4% and 6% potassium permanganate on the weight of wool is sufficient with the vast majority of fabrics but only exactly similar pieces should be treated simultaneously as, under given conditions, some fabrics react with permanganate much more rapidly than others. Some colors are affected very slightly by the treatment, and if goods are to be piece dyed and exactly on shade it is better to shrinkproof before dyeing.

This method gives a high degree of shrinkage resistance and is recommended for fabrics intended for subsequent setting to obtain washable "non-iron" effects.

RETENTION OF APPEARANCE ON LAUNDERING———From the distortion and mussiness of normal wool fabrics after mild laundering and in some cases, even after wetting, it was obvious that a setting treatment was required to set wool fabrics in a flat state to which they would return after wetting, washing and drying.

It had been observed that, in Si-Ro-Set garments, not only were the creases retained after wetting and drying, but the flat portions also retained their appearance. An obvious procedure, therefore, was to apply the Si-Ro-Set treatment to garments made from shrinkproofed fabric. This was found to give very encouraging results, but such a method would be limited to trousers and pleated skirts whereas a more general application was required in which the treatment is applied to fabric in the mill, and from it such garments as frocks, blouses, shirts, straight skirts and children's wear could be manufactured. However, these experiments *did* show that the same general procedure could give satisfactory results, ie, heating wool in the presence of a dilute solution of a reducing agent while holding it in the desired form.

The two major requirements for mill treatment of fabric, therefore, are 1) even application of a controlled amount of water and reducing agent, and 2) some means of holding the fabric firm and flat while heat is applied. Experiments were carried out using a pad mangle to satisfy the first requirement and a blowing machine for the second, and varying the concentration of reagent, uptake of solution, steaming time, etc, in order to define the optimum conditions for fabric setting. These were found to be: 1% solution of reducing agent, 50% uptake of solution, and five minutes steaming at 80 lb/in^2 line pressure. Many shrinkproofed fabrics were set under these conditions and evaluated for "non-iron" properties, both as fabric and as garments. The results obtained were very satisfactory and warranted further investigation on an industrial scale. However, it was first necessary to decide on the most suitable reducing agent for the purpose.

Although ammonium thioglycollate had several advantages which led to its use for the Si-Ro-Set process, the cost, high rate of oxidation and discoloration by traces of iron were major obstacles to its use in textile mills. Although any reducing agent capable of giving rapid breakdown of some disulfide bonds would be suitable, sodium bisulfite has much to commend it for industrial use and, in addition, is well established as a potential setting agent for wool from the work of Prof Speakman at Leeds University. It was decided, therefore, to use this reagent for setting fabrics on an industrial scale.

RELAXATION SHRINKAGE—— The shrinkage which occurs when wool fabrics are relaxed in water is known as relaxation shrinkage and is considered to be due to release of yarn and fabric strains imparted during manufacture. The amount of shrinkage varies considerably between fabrics but can be as high as 5%, which is far too great for a garment that is to be washed and worn without pressing. It was obvious, therefore, that steps had to be taken to ensure that fabrics were finished free from strain.

Experiments showed that the setting treatment could be carried out at the end of the finishing routine (ie, after cropping, brushing, etc) and the only subsequent treatment necessary was drying, followed by a light steaming on the blowing machine.

After wetting with bisulfite solution and steaming during the setting treatment, the fabric is in a completely relaxed state so that, provided no strains are introduced after this stage (ie, in drying and final blowing) the fabric should be free from relaxation shrinkage. Experiments showed that this was indeed the case.

INDUSTRIAL TRIALS——Following all the above considerations, it was decided to carry out some industrial treatments on a large scale, shrinkproofing by McPhee's method (*6*), setting with bisulfite solution using a blowing machine, and drying free from strain. As would be expected, several difficulties were revealed and had to be overcome. The major problems, and the solutions to them will now be discussed.

APPLICATION OF REAGENT——So many of the finishes available today require a pad mangle for efficient and effective application that such equipment has really become absolutely necessary in all finishing plants. However, although a pad mangle or an efficient open-width squeeze is the obvious and best method of applying a controlled amount of bisulfite solution, many mills still do not have equipment of this type.

The other possibilities for applying controlled amounts of solutions is to run pieces in the dolley or winch and then hydro-extract, rope squeeze or suction-hydro. The first two methods give very uneven distribution of solution with consequent risk of streakiness and uneven treatment, while the suction-hydro allows open-weave fabrics to retain too much solution unless special precautions are taken to overcome this difficulty. It must be concluded, therefore, that while these methods may be satisfactory in some instances, the risk of unevenness is very great.

BLOWING MACHINE——Although the principle of this machine is ideal for setting fabrics with solutions of reducing agents, there are two main factors to be considered in practice.

First, the cotton wrappers are so expensive that any reduction in their life resulting from the treatment must be regarded as a major disadvantage. Laboratory experiments and limited industrial trials suggest that there is no adverse effect from the treatment, but the possiblity cannot be excluded until the method has been used in continuous production for a long period.

The second difficulty with wrappers is the possibility of staining. Shrinkproofed fabrics are more likely to pick up stains than normal fabrics and this, coupled with the fact that damp fabrics are being blown, makes it necessary for blowing wrappers to be kept clean, particularly when processing light shades. For the same reason, maximum washfastness is required in dyes as there is danger of color left on the wrapper from one piece marking back on to a subsequent piece. This could be largely overcome by maintaining separate wrappers for treating light, medium and dark shades, and washing them more frequently than is the present custom.

Because of the above difficulties, alternative methods of setting have been investigated, eg, crabbing in bisulfite solution, steaming on the blowing machine without a wrapper, etc. All of them gave satisfactory setting, but all suffered from one or more disadvantages, eg, stains, unevenness from outside to inside, embossing of selvedge marks if the piece was not run on exactly straight, moiré effects. For certain types of pieces each method could no doubt be used, but for a general machine for all fabrics, the blowing machine is to be preferred.

DYEING AND PRINTING——This was probably the greatest problem encountered because of the many fastness requirements. Obviously for satisfactory garment performance, the dyes used must have good fastness to light, perspiration, rubbing, and washing. In addition, however, the dyes must be stable to the shrinkproofing treatment if dyed before proofing, or capable of being dyed level after shrinkproofing if this routine is preferred. Finally, as seting should be the last wet process, they must be stable to the setting process, and this involves two separate factors.

1) Stability to water at high temperatures; although a washfastness of 4 would be satisfactory for garment washing, it was found that colors of washfastness 5 were necessary to avoid bleeding of color onto the blowing wrapper.

2) Stability to sodium bisulfite. No dye manufacturer's fastness tables give this information, but it has been found that dyes with a fastness of 5 to sulfur stoving are generally unchanged by the bisulfite treatment.

No difficulty was experienced in finding dyes with satisfactory properties for stock or top dyeing, as levelness is not so critical. However, dyes which are stable to shrinkproofing must be selected. For piece dyeing, no difficulty has been experienced in dyeing level after shrinkproofing with permanganate, but the only *class* of dye which meets all the requirements is the neutral- or weakly acid-dyeing premetallized colors. This class does not give a complete range of shades but can be supplemented in the blues and greens by one or two individual members of other ranges. For bright shades, however, these are not suitable and it is necessary to top dye with colors of appropriate properties..

No difficulty was experienced in selecting dyes for printing because printing can be quite satisfactorily carried out after shrinkproofing and setting, so the only requirement other than the usual ones for outerwear is suitable fastness to washing.

pH——The pH of the fabric before setting was found to be very important. The optimum pH for setting with bisulfite is 5; if it is less than 4, setting is ineffective, all the bisulfite being decomposed, while above pH 6 it was found that some fabrics become stiff during the setting treatment. This stiffening can be removed by some mechanical treatment such as squeezing between rollers, but it is preferable to avoid the effect by bringing the fabric to pH 4-6 prior to setting. Although it is not easy to adjust a batch of fabrics to this range, pieces dyed with the type of dye recommended above and using mono-ammonium phosphate as the dyeing assistant, have been found to be at the correct pH. For pieces which are shrinkproofed after dyeing, the use of acetic acid in the bisulfite clearing bath, followed by adequate rinsing, leaves the piece at the correct pH for setting.

DRYING AFTER SETTING——It was pointed out previously that, after the setting treatment, pieces are in a relaxed state and must be dried in this condition to avoid introducing relaxation shrinkage. General practice is to dry pieces at one to two inches over wet width, but it is not generally realized that wet width is appreciably greater than stable dry width (usually one to two inches but sometimes as much as four inches) and, in consequence, drying at one to two inches over wet width

introduces at least two inches, and generally more, relaxation shrinkage in the filling of a 56-inch fabric.

To produce a fabric entirely free from relaxation shrinkage, it is necessary to determine the stable dry width after setting, and to tenter the damp piece at this width, with overfeed on the tenter to eliminate warp extension. This means tentering at less than wet width—ie, slack—and while no difficulty is experienced in doing this on a single-lay flat tenter, there is a great risk that the piece may blow off the pins of a multilay tenter. Experiments with the latter type of machine at slower speeds gave no difficulty, probably due to sufficient drying occurring during the first lay to tauten the fabric on the pins. However, insufficient experience has been gained with this procedure to make a definite recommendation.

Other alternatives are to dry atmospherically as in London shrinking, when the fabric would dry in about 30 minutes with good air circulation, or to dry at wet width and subsequently remove the relaxation shrinkage on some efficient continuous shrinking machine. However, with this latter method, it must be ensured that the machine does, in fact, remove all the relaxation shrinkage.

FINAL FINISHING———The only finishing found necessary on all fabrics processed in the mill trials was a light steaming on a blowing machine. Pressing was not required, but in the event of a manufacturer wishing to use pressing as a final process, the rotary press should be avoided, as this has been found to introduce appreciable warp extension.

EVALUATION OF TREATED FABRICS———All the fabrics treated in the above industrial trials have been examined for relaxation shrinkage, felting shrinkage, "non-iron" property using AATCC Tentative Test Method 88-1958 (*8*) with hand wash-drip dry and machine wash-drip dry washing cycles, wrinkle recovery, handle, bursting strength. Finally, they were made into garments and subjected to wearing trials under a variety of conditions. Detailed results cannot be given here but, in general, the relaxation shrinkage was ± 0.5%, felting shrinkage less than 5% in area after one hour in a tumbler-type washing machine, "wash-wear" rating of 4-5 and generally better than 5, improved wet wrinkle recovery and unchanged dry recovery, excellent handle and a reduction of about 10% in bursting strength. The garments performed excellently, from the point of view of both wear and retention of appearance on laundering. It must be emphasized that all evaluations were made on a drip-dry basis, as domestic-type tumbler driers are not yet available in Australia. However, thanks to the cooperation of the Wool Bureau Inc in New York and the generosity of American machine manufacturers, three American automatic wash-tumble drier units have been donated to our laboratory and all the fabrics and garments are being re-evaluated on a machine wash-tumble dry cycle. Preliminary results are very promising.

CONCLUSION

Two things must be pointed out in conclusion. First, we do not believe that this is the *only* approach to washable "non-iron" wool fabrics. Other methods and techniques will undoubtedly be developed for achieving the same end results, with possibly fewer difficulties than those outlined above. However, we *do* believe that the methods described above are practical ones, capable of being used by manufacturers—in fact, some Australian mills are already using them on a normal production basis, and the resultant fabrics perform equally as well as any "wash-wear" fabrics available commercially at present, and better than many. Secondly, satisfactory "wash-wear" fabrics do not automatically give satisfactory "wash-wear" garments. There are a great many problems associated with the design and construction of garments which do not become distorted on washing—seam structure, sewing techniques, etc. These problems are common to all "wash-wear" garments, irrespective of the fabric from which they are constructed, and wool fabrics will not be an exception.

ACKNOWLEDGMENTS

The work on washable "non-iron" fabrics was carried out by Dr M Lipson (Chief of Division), Dr J R McPhee and myself at the Commonwealth Scientific and Industrial Research Organization's Division of Textile Industry, Geelong, Australia. We were greatly assisted in different aspects of the work by various members of the staff of the Division, particularly Misses V I Tomljanovics and L M Boardman and H D Feldtman and B D Harding, and by John Alexander of Leeds Dyeing and Chemical Works Pty Ltd. To all these people, grateful acknowledgment is made. In addition, I would like to express my sincere thanks to the executive of CSIRO and the chief of the Division of Textile Industry for making it possible for me to visit this country and to give this lecture.

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(*5*) Farnworth, A J, Lipson, M, and McPhee, J R, *Textile Research J 30*, 11 (1960); CSIRO Division of Textile Industry Report Nos. G.8 and G.9 (August, 1959).
(*6*) McPhee, J R, *Textile Research J 30* (1960), in press; CSIRO Division of Textile Industry Report No. G.8 (Aug, 1959).
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AATCC Calendar

COUNCIL, COUNCIL COMMITTEES, RESEARCH COMMITTEES
Jan 18-20 (Sheraton-Atlantic Hotel, New York, NY); Jan 18-19—Council Committees and Research Committees; Jan 19 (PM)—ECR, TCR; Jan 20 (AM)—Council

NATIONAL CONVENTIONS
Sept 27-29, 1961 (Hotel Statler, Buffalo, NY); 1962 (Atlanta Biltmore Hotel, Atlanta, Ga); 1963—Boston; 1964—New York; 1965 (Conrad Hilton Hotel, Chicago, Ill)

HUDSON-MOHAWK SECTION
Jan 13 (Jack's Restaurant, Albany, NY—paper on Nonwoven Fabrics); Mar 10 (Johnstown, NY—paper on "Wash-and-Wear" Fabrics); Apr 14 (Waterford, NY—plant tour of General Electric Co's Silicone Div); May 12 (Ladies Night); June 23 (Outing—Antlers Club, Amsterdam, NY)

METROPOLITAN SECTION
Jan 20 (Hotel New Yorker, New York, NY—"AATCC Goals"—Elliott Morrill, Corn Products Co, AATCC president; Feb 17 (Hotel New Yorker, New York, NY—"New Developments in Dye Assistants"—speaker from the DuPont Co); Mar 24 (Kohler's Swiss Chalet, Rochelle Park, NJ—"Polyolefins"—speaker from AviSun Corp); April 21 (Kohler's Swiss Chalet, Rochelle Park, NJ—"Importance of Bow and Skew"—Lucille Rea, Simplicity Patterns, and John Robertson, Mt Hope Machine Co); May 19 (Kohler's Swiss Chalet, Rochelle Park, NJ—Ladies Night.

MID-WEST SECTION
Feb 4 (Sherman Hotel, Chicago, Ill); April 15 (Schroeder Hotel, Milwaukee, Wis); June 24 (Annual Outing—Cerami's Island View Resort, Burlington, Wis)

NIAGARA FRONTIER SECTION
Apr 7 (Joint meeting with Ontario Section, CATCC, St Catherines, Ont); May 18 (Buffalo, NY)

NORTHERN NEW ENGLAND SECTION
Jan 20 (Hotel 128, Dedham, Mass—Symposium on "Mechanical and Chemical Finishing of Textile Fabrics"— John J MacDonald, Lowell Technological Inst; D D Gagliardi, Gagliardi Research Corp; and Werner von Bergen, J P Stevens & Co, Inc)

PIEDMONT SECTION
Jan 21 (Poinsett Hotel, Greenville, SC); April 2 (Washington Duke Hotel, Durham, NC); June 9-10, 1961 (Outing—Grove Park Inn, Asheville, NC); Sept 23, 1961 (Hotel Charlotte, Charlotte, NC)

1960 Convention———

1960 AWARDS LUNCHEON*

William H Bertolet III: Good afternoon, ladies and gentlemen.

I know most of you here, but let me introduce myself to those I haven't met. My name is Bill Bertolet and I am cochairman of the committee for this Convention.

The 1960 Convention is off to a good start as indicated by the attendance at this meeting. I would say that the excellent turnout can be attributed to the wishes of so many to pay tribute to our guests who have distinguished themselves in several outstanding ways. You will meet them and hear about their achievements later on. Meanwhile, I would like to introduce some of the people seated at the table with me. I would appreciate it if you would hold your applause until I have completed the introductions.

First, let me present several people who have distinguished themselves by having had the good fortune to be married to those we are honoring here today. In their own right, too, they deserve recognition as lovely and charming ladies.

May I present Mrs Victor S Salvin, Mrs Arnold M Sookne, and Mrs Leonard S Little.

On my far left, George P Paine, our executive secretary.

Myron D Reeser, representing the Howes Publishing Co, Inc, which endowed the Olney Medal and the American Dyestuff Reporter Award.

Arthur R Thompson, our lay representative of the church and treasurer of AATCC.

On my far right, the man responsible for quarterbacking our Convention Committee and the Convention chairman—Fred V Traut.

And now for the business at hand, I would like to turn the chair over to our Association's national president—Weldon G Helmus.

* * *

Weldon G Helmus: Thank you, Mr Chairman.

Distinguished guests, fellow members of AATCC, ladies and gentlemen:—

This is an occasion I have been looking forward to with the greatest pleasure. To personally present the Association's three awards is an honor in itself, and I feel very privileged to have the opportunity to participate in these ceremonies.

Selecting a man or woman for an AATCC award is not an easy assignment. The three committees concerned have deliberated at length and at least one, in several sessions. AATCC is fortunate to have so many, deserving of so much. This also speaks for the high attainments required by the conditions of each of these awards.

The harder pressed the committees become to make a choice, the more significant the award becomes in the annals of science. The final decisions have become soul-searching quests. We, therefore, can feel satisfied that service and science are not mere words but are meaningful in their truest sense.

The committee for the American Dyestuff Reporter Award was headed this year by a man who served as seventh president of AATCC in 1940 and 1941. He has been active in guiding our publications over many years and was selected to serve on this committee because of his scientific and editorial capabilities. Carl Z Draves was unable to be here today, and I am going to ask A Henry Gaede, AATCC vice president from the Southern Region, to present the recipients.

Mr Gaede.

* * *

A Henry Gaede: Mr Chairman, ladies and gentlemen:—

The American Dyestuff Reporter Award was endowed by the Howes Publishing Co, Inc as a memorial to Alfred P Howes, founder of *American Dyestuff Reporter*. A prize of two hundred dollars is presented annually to the author or authors of the best technical paper published in the *Proceedings* of the Association from July 1 one year through June 30 of the next. The selection is made by three qualified judges and all papers presented before local or national meetings and published in the *Dyestuff Reporter* are eligible except Intersectional Contest papers, papers by AATCC employees, or Research Committee reports.

The paper selected for this year's award is entitled "Relation of Dye Structure to Properties of Disperse Dyes". It was published in the July 13, 1959 issue of the *Dyestuff Reporter* and was first delivered by Victor S Salvin before the Piedmont Section in Winston Salem, NC, on April 11, 1959.

It is a pleasure to present to you the authors of this very fine paper: Dr Salvin of Celanese Fibers Co, Ruth A Walker of Hunter College, and John R Adams Jr of Celanese Fibers Co. Thank you.

* * *

Weldon G Helmus: The cash award is $200.00. Because there are three co-authors of the paper, we have split it three ways. I have checks for Dr Walker and Dr Adams in amounts of $66.66, and one for Dr Salvin for $66.68. I am giving him the larger check because he will speak to the group.

The plaques, however, remain intact and I have one for each. If you will all three step forward, I would like to hand them to you.

* * *

Victor S Salvin: I should like to express thanks not only for myself, but also in behalf of the co-authors of the paper, Dr Ruth A Walker and Dr John R Adams Jr, to the Awards Committee which has chosen our paper to receive the American Dyestuff Reporter Award for 1960. The concept of responsibility comes to mind in these informal remarks. These responsibilities include those of the Corporation to the textile scientists, the responsibility of the scientists to the fellow members of the AATCC, and the responsibility of the individual to himself.

This paper is a product of industrial research. The type of information and the principles established have been done in a research climate fostered by a private corporation. It has been my experience that the Corporate Members (both large and small) of the AATCC have encouraged the participation of our AATCC members in such endeavors as AATCC Research Committees and Intersection Contest Papers. It is only by encouraging the individual to do work of this nature and giving him permission to publish results of these efforts that the entire industry can benefit. It appears to be the opinion of many corporations including my

*Held October 6, 1960 at the Sheraton Hotel, Philadelphia, Pa.

own, the Celanese Fibers Co, that it is actually good business foresight on their part to encourage this type of industry effort.

The writer of any paper has the responsibility of communicating the results of his efforts to his fellow members of the AATCC in such a manner that it will be understandable and useable. As an organization, we are trying to do our own jobs better and to help other men do their jobs better. However, we find all to often that the writing of reports and communication of results is not being successfully done. I would suggest a return to the three R's of education in our colleges and textile schools, namely, reading, writing, and reasoning.

Finally, the individual owes it to himself to make whatever contribution he can to his industry. There is the inner compulsion which every true research worker experiences which encourages him to seek out the truth and to establish facts and principles that illuminate the many problems which beset our industry. It is in the spirit of the recognition of the worth of the individual, which is also being shown in the other awards today, that we accept the American Dyestuff Reporter Award.

* * *

Weldon G Helmus: The Harold C Chapin Award Committee is composed of members from each of the four geographical regions of the Association. The chair rotates annually and this year is occupied by a member of the Convention's home section. It gives me great pleasure to present to you the man who will introduce the recipient of the Harold C Chapin Award—Donald W Robinson.

* * *

Donald W Robinson: It is indeed a pleasure for me to be here today as chairman of the Harold C Chapin Award Committee and I have experienced an additional pleasure as a member of the study committee for this award. The Award is presented annually to a Senior Member of at least 20 years continuous membership who has contributed outstanding services in enabling the Association to obtain the objectives for which it was founded.

The man I have the pleasure of introducing today is a charter member of the AATCC and one of the organizers of the Piedmont Section of our Association. He is also a past chairman of the Piedmont Section, and to point out the growth of our Association, it might be well to add that this originally small section has grown into one of the largest in the Association and has, since its organization, been split into three separate sections.

In addition to being a charter member and an organizer of the Piedmont Section, our recipient was also one of the organizers of the Executive Committee on Research and served this committee as chairman for 10 years. He has also been active on the President's Advisory Committee and the Corporate Membership Committee. In addition to his activities in the AATCC he is also well known in other scientific organizations.

His business career includes a vast amount of experience in the supervisory capacity of some of the best-known textile dyeing and finishing plants in the country and at the present time he is engaged as a textile consultant.

It gives me a great deal of pleasure at this time to present the winner of the second Harold C Chapin Award—Leonard S Little.

* * *

Weldon G Helmus: I am going to ask Mr Robinson to hold this beautiful scroll up for all to see while I read from a copy of the text:

"The Harold C Chapin Award, presented to Leonard S Little, whose outstanding services have contributed to the attainment of the objects for which the Association was founded. As a Charter Member, chairman of the Piedmont Section, chairman of the Executive Committee on Research for two terms, chairman of the President's Advisory Committee, chairman of the Corporate Membership Committee, Councilor of the New York Section, chairman of an American delegation to the International Organization for Standardization (ISO), chairman of the International Day Committee of the Perkin Centennial, leader in the textile industry, and loyal friend he has served the Association well for forty years, with devotion, wisdom, and statesmanship, bringing recognition and honor to AATCC. Signed: Weldon G Helmus, president, and George P Paine, executive secretary, October 6, 1960."

* * *

Leonard S Little: Mr President, fellow members and guests:—

First I wish to express my sincere appreciation for the honor you have extended to me here today. My brief remarks will be confined to highlights of my AATCC experiences.

When our association was organized in Boston in 1922, I had the good fortune to become one of its Charter Members. Louis A Olney was the founder and first president of AATCC. Harold C Chapin, for whom this award is aptly named, was closely associated with Dr Olney at Lowell Technological Institute as an outtanding member of its faculty. They both worked ably and unstintingly in the work of establishing AATCC. To them goes the credit for the sound position and high standing we enjoy in the world today. Dr Chapin can take great pride in the affection and high regard in which he is held by his many friends and associates.

In 1923, I transferred from the Pacific Mills Print Works at Lawrence, Mass to assume charge of the building and full operations of their new, cotton mill and finishing plant at Lyman, SC, which was completed with up-to-date village and community facilities in 1924.

While we were starting in Lyman, a group of Southern chemists and executives organized our Piedmont Section, inviting me to join them. The experiences and friendships formed there have covered one of the most inspiring periods I have been privileged to enjoy. I served as one of the early chairmen of the Section, presiding at the first annual AATCC Convention held in the South at Charlotte, NC, in 1926.

After working at Lyman and moving north, I held membership in the Philadelphia and Rhode Island Sections and later, while heading the United States Finishing Co operations, I was active on the Executive Committee of the National Association of Textile Finishers, serving in NRA days as one of the three men representing the textile finishing industry.

In 1942, I was a Councilor for the New York Section. During this period I was appointed by the Council to organize the Executive Committee on Research. Robert Bonnar, William Appel, Thomas Smith, and P J Wood were members of the first operating committee of ECR. Dr Olney was an important member of both these committees, giving them his valued assistance and support. We shortly replaced the old General Research Committee with the present Technical Committee on Research. This committee reported directly to ECR, which reported to the Council. TCR was responsible for the subcommittee activities. The scope of the subcommittees was broadened to emphasize end-use evaluation factors in textiles.

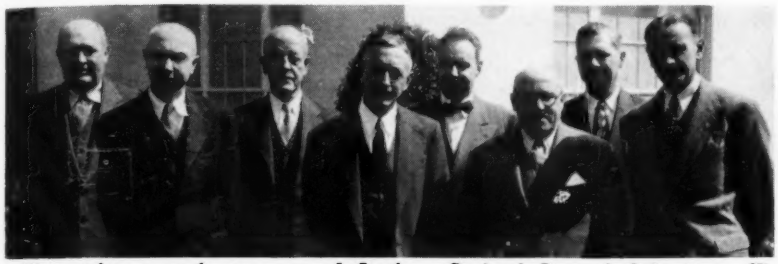
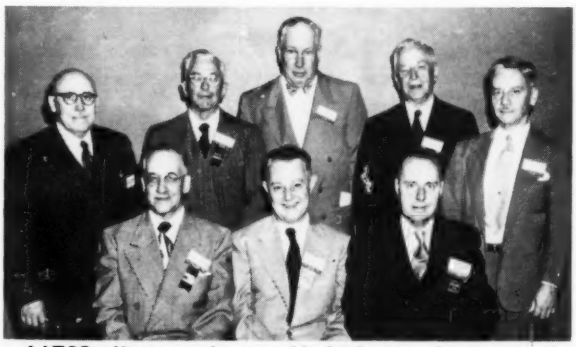


Photo taken several years ago of Southern Regional Research Laboratory officials and collaborators at an annual meeting in New Orleans shows faces familiar to AATCC members. Front row, l to r: William D Appel, past president of AATCC, 1954 Olney Medalist, and present editor of AATCC's Technical Manual; **James Dean, who at the time was chief of the Cotton Chemical Process Division at SRRL; Leonard S Little; Walter M Scott, who at the time was assistant chief of USDA's Bureau of Agricultural and Industrial Chemistry. In the back row, l to r, are Harry Newton, the assistant director; William H Cady, past president of AATCC and Olney Medalist; J Robert Bonnar, past president of AATCC and past chairman of ECR; and Charles W Dorn, past chairman of ECR.**

Photo shows portion of American delegation enroute to ISO meeting in 1951. L to r: William D Appel, past president of AATCC, 1954 Olney Medalist, and present editor of AATCC's Technical Manual; **Mrs Appel; C Norris Rabold, AATCC president at the time; Marry Rollins of the Southern Regional Research Laboratory, USDA, and Leonard S Little**



AATCC officers at the time Mr Little was chairman of the Executive Committee on Research (1951). Seated, l to r: Geo O Linberg, vice president; C Norris Rabold, president; J Robert Bonnar, vice president. Standing, l to r: Mr Little; Harold C Chapin, secretary; Albert E Sampson, assistant treasurer; William R Moorhouse, treasurer; Harold W Stiegler, director of research.

Charles Dorn and Charles Sylvester, with many others, have been prominent factors in ECR and TCR. I would be amiss if I did not mention the fine cooperation we have always received from Robert Bonnar, William Appel, William Cady and Harold Stiegler and his staff, to mention only a few.

In connection with 10 years of ECR responsibilities, I served on joint AATCC committees with the American Standards Association and with ASTM. For a number of years I enjoyed the assignment as collaborator to the Southern Regional Research Laboratories at New Orleans. Excellent cooperative work has been established with the Society of Dyers and Colourists of England, and I have been fortunate to have visited the leading research laboratories of England and the Continent with some of our AATCC associates. Now just a few suggestions.

A individual members we should keep active in the work of our Association, keep abreast of the remarkable research developments in our industry, make friends and close contacts with the important men in our field, and especially cultivate and encourage younger men.

In our Association work we must not cease to drive for increased membership and to strengthen our research in developing new and improved test methods. *We should secure the paid services of a man of recognized standing and ability to head up all of our research activities.* This man should be in close touch with the leading chemists, technologists and executives in the textile industry. He should guide technically our contacts with allied associations and be responsible for maintaining our position of technical leadership in our particular field. Our executive secretary deserves our continued support in his drive for improvement in our general management operations and in our technical publications.

I certainly wish to express my appreciation for the confidences placed in me in various assignments and hope I have been worthy of those trusts. Thank you.

* * *

Weldon G Helmus: Since I served on the Olney Medal Committee, its chairman, Edward Lawrence, asked me if I would like to introduce this years' recipient. I told him I would be delighted but that I felt he should have this privilege. However, I have deferred to his insistence.

This medal is given "for outstanding achievement in the field of textile chemistry, including the development of chemical agents or chemical processes used in the manufacture of textiles, or methods for their evaluation".

The man who will receive this medal today is eminently qualified to meet these conditions. So extensive have been his achievements that I cannot begin to set them forth for lack of time.

So let me refer you to the AATCC Convention issue of *American Dyestuff Reporter,* which contains the full account.

Briefly, let me say that he received

his bachelor of science degree Magna Cum Laude from Brooklyn College in 1935 and his master of science degree from George Washington University in 1942. In 1949, he received an Honors Day Award from Brooklyn College in recognition of his studies on the molecular structure of cellulose and its derivatives and the application of this work to the advancement of a better understanding and use of textile fibers. He is coauthor of six United States Patents and has had published more than forty scientific papers which reflect his accomplishments in the fields of textiles and polymer chemistry. He is a young man—only 45 years old. I am somewhat awed by the prospect of what is ahead for him.

He has been with Harris Research Laboratories, Washington, DC, since 1945, where he holds the post of associate director. He has been active in AATCC as chairman of the Technical Program Committee for the Washington Convention last year, as a chairman of the Washington Section, and as a member of numerous AATCC research committees.

It is my very great pleasure to present the 1960 Olney Medal, accompanied by a testimonial certificate, to Arnold M Sookne.

* * *

Arnold M Sookne: Mr Chairman, honored guests, ladies and gentlemen:—

I need hardly tell you that I am very, very happy to have been chosen for this award, the highest in American textile chemistry, and that I am grateful to have my name added to the distinguished roster of earlier recipients. The need for recognition exists in almost all of us, I suppose, and it's probably stronger in scientists than others. I'm grateful to you for telling me in this generous way that you think highly of my contributions to our industry.

I must confess that I entered textile chemistry by accident, which turned out to be good fortune. I have found it filled both with challenging problems and rewards. The challenging problems can be found in almost any professional occupation, but mine has permitted and indeed encouraged me to publish papers, and to speak before learned and technical societies. It has even provided the thrill of seeking developments to which I had contributed being used in industry. My greatest good fortune, however, has been to have been exposed to inspiring leadership from my earlier working days, and to have worked with many of the most wonderful people in this or any other industry. I'd like to tell you about some of them in the next three minutes with the help of three pictures.

(The speaker then referred to slides portraying former and present associates in Harris Research Laboratories and the Textile Foundation Research Associateship at the National Bureau of Standards. He acknowledged his debt to these colleagues, many of whom have distinguished themselves as Olney Medalists, presidents of the AATCC, college professors, or outstanding textile scientists.)

These are some of the many noteworthy people with whom I've had the privilege of working. Some have been my teachers, others my colleagues, still others my pupils. They have made my working life a happy one, and it will be quite a challenge for me to do as well for the younger people who work with me.

Again, thank you for choosing me for this honor, which will always be a source of inspiration to me.

* * *

Weldon G Helmus: Thank you, Mr Sookne. I will now turn the meeting back to Mr Bertolet.

* * *

William H Bertolet III: Thank you, Mr President.

I would like to be among the first to congratulate the recipients of the awards presented here today. These are but tokens of a major debt the Association owes each and every one of you for the outstanding contribution you have made to AATCC and to our industry.

After this meeting has adjourned, will you kindly move into the other section of the Ballroom. Mr Sookne will give the Olney Medalists' paper, which will be followed by a closed-circuit color television presentation on "Science and Craft in Color", originating from Philadelphia Textile Institute.

I now declare this meeting adjourned.

Important Announcement
To all Manufacturers of Dyes and Pigments
First Supplement to the Second Edition of the Colour Index

THE American Association of Textile Chemists and Colourists and the Society of Dyers and Colourists are now actively engaged in the preparation of a First Supplementary Volume to the Second Edition of the *Colour Index*. To achieve prompt publication, *March 31st 1961* has been set as the last date on which information for inclusion will be accepted. It is hoped, however, that manufacturers will submit the information about their products as soon as they possibly can so that the work of compilation can go on steadily.

Many manufacturers have responded to the notice sent out in January 1959 or the reminder sent in January 1960. The information received from them has been incorporated in Quarterly lists of Additions and Amendments, eight of which have been issued. This information is limited to alterations in commerical names or brand marks of existing products and to commercial names, hues, usage classes, *Colour Index* Part I and Part II designations, chemical classes, and, if available, chemical constitutions of the products requiring new *Colour Index* names or numbers.

Now needed are the details of the dyeing properties and usages of products that do not fall within any Part I Designations (ie, generic names, such as CI Acid Yellow 1) in the 2nd edition of the *Colour Index*. The manufacturers who have already responded are asked to supply these details. Manufacturers who have not responded should let us have all necessary information about their products. Attention is especially drawn to the fact that if the information is not received by March 31, 1961 it cannot be included in the First Supplementary Volume.

Letters have been sent to all manufacturers who cooperated in the preparation of the Second Edition of the *Colour Index* explaining in more detail what is needed. Manufacturers who have not received this information should address a request for it to: William D Appel, Chairman, Colour Index Supplement Editorial Committee, 9101 Jones Mill Road, Chevy Chase 15, Maryland.

ACTIVITIES OF THE LOCAL SECTIONS

Rhode Island

RHODE ISLAND SECTION held its Annual Meeting on Friday, Dec 2, 1960 at the Sheraton Biltmore Hotel, Providence, RI, with about eighty in attendance.

J B Goldberg, consultant to the textile and allied industries, served as guest speaker. In his subject, "The Expert Witness", he related some experiences in arbitration and court proceedings.

The following slate of officers was elected to serve for 1961:

Chairman—John J Roarke
Vice Chairman—Charles Robinson
Treasurer—Harold B Sturtevant
Secretary—Richard V Dugdale
Councilors—Kenneth J Broden, Edward W Lawrence, Arthur McLean, Raymond Taylorson

Sectional Committee—Edward N Alexander, Alden D Nute, James J Price Jr, James J Dillon.

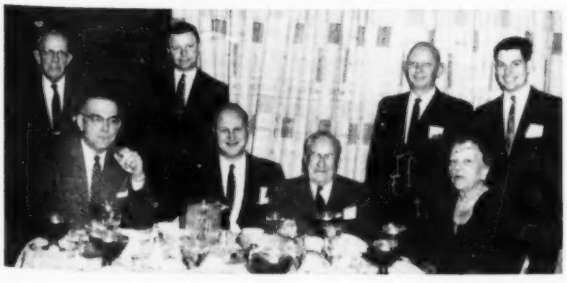
The Section will hold its next meeting on Friday, January 27 at Lindy's Restaurant, Providence, RI.

Mid-West Section Meeting

October 29, 1960 • Bismarck Hotel, Chicago, Ill

Mid-West Section Chairman James L McGowan, Morgan Dyeing & Bleaching Co, presents silver tray to J G Stott, Ciba Co, Inc, who is retiring. Mr Stott served the Section as chairman in 1954.

HEAD TABLE—Seated, l to r: J L McGowan, Morgan Dyeing & Bleaching Co, chairman; J Miller, Corn Products Co, treasurer; J G Stott, Ciba Co, Inc, past chairman; K Giese, Chippewa Falls Woolen Mill Co. Standing, l to r: J DiLorenzo, Koppers Co; G H True, evening speaker; W D Paine, General Aniline & Film Corp



MEMBERSHIP APPLICATIONS

November 30 - December 7, 1960

NEW ENGLAND REGION

Rhode Island Section

Junior

John W May—Colorist, Cranston Print Wks Co, Webster Div, Webster, Mass. Sponsors: J A Cooney, R H Phillips.

CENTRAL ATLANTIC REGION

Metropolitan Section

Associate

Albert J Young—Trainee for chemical-dye salesman, American Cyanamid Co, Bound Brook, NJ.

Delaware Valley Section

Associate

Daniel B Campbell — Salesman, Procter & Gamble Co, Philadelphia, Pa.

SOUTHERN REGION

Washington Section

Transfer to Senior

Joseph M Perri—Senior res chemist, E I duPont de Nemours & Co, Inc, Benger Lab, Waynesboro, Va. Sponsors: F H Forziati, E McNeil.

Piedmont Section

Student

Gerard M Currier—Student, High Point College, High Point, NC. Sponsor: E O Cummings.

Transfer to Senior

Benjamin H Bell—Dyer, Old Dominion Fin Co, Burlington Ind Inc, Hurt, Va. Sponsors: S Williams, B F Rivers.

Edward A Dalmas—Asst southern mgr, Becco Chem Div of FMC, Charlotte, NC. Sponsors: P D Caine, A P Shutts.

James B Johnson—Tex chemist & engr, Minneota Mining & Mfg Co, High Point, NC. Sponsors: J E Gill, C L Martin.

Chung Sun Suh—Lab chemist, Greensboro Finishing Plant Lab, Burlington Ind Inc, Greensboro, NC. Sponsors: J L Neal, C J Graham.

Southeastern Section

Senior

James N Foster — Process dev chemist, The William Carter Co, Barnesville, Ga. Sponsors: N S Dunten, R A Stowe.

Rita Maria Perkins — Chemist, Southern Regional Res Lab, U S Dept of Agriculture, New Orleans, La. Sponsors: G L Drake Jr, W A Reeves.

Associate

Patrick N Baker—Heavy chemicals salesman, Olin Mathieson Chem Corp, Atlanta, Ga.

Transfer to Associate

Virgil DeWayne McHone — Research chemist, West Point Mfg Co, Research Div, Shawmut, Ala.

WESTERN REGION

Mid-West Section

Senior

Robert S Cooper—Research chemist, Victor Chemical Div, Stauffer Chem Co, Chicago Heights, Ill. Sponsors: G M Kidder, G J Mandikos.

Transfer to Senior

Thomas J Dicus—Master dyer, Morgan Dyeing & Bleaching Co Inc, Rochelle Ill. Sponsors: A A Gorski, J L McGowan.

Transfer to Junior

Stephen M Swift—Textile chemist, American Institute of Laundering, Joliet, Ill. Sponsors: G M Kidder, G J Mandikos.

NOT AFFILIATED WITH A SECTION

Senior

Mohamed E S El Ghoroury—Asst works mgr, Misr Beida Dyers, SAE, Alexandria, Egypt, UAR. Sponsors: G J Mandikos, G M Kidder.

STUDENT CHAPTERS

North Carolina State College

Student

William S Griffith—Student, North Carolina State College, Raleigh, NC.

Philadelphia Textile Institute

Henrietta L Goethe—Student, Philadelphia Textile Institute, Philadelphia, Pa. Sponsor: W H Hughes.

Norman H Nemeroff — Student, Philadelphia Textile Institute, Philadelphia, Pa. Sponsor: W H Hughes.

ELECTED TO MEMBERSHIP

November 30, 1960

No designation after name indicates Senior
(A) indicates Associate
(J) indicates Junior
(S) indicates Student
* indicates transfer from another class of membership.

NEW ENGLAND REGION

Western New England Section

Harold G Hencken
Norman C Davis Jr
Joseph A Kenny

CENTRAL ATLANTIC REGION

Metropolitan Section

Walter J Olenick

SOUTHERN REGION

Washington Section

Donald P Gush

Piedmont Section

Gene N Cline
Chesley W Singleton
Robert M Marshall (J)
Lester F Stevens (S)

WESTERN REGION

Mid-West Section

Norvald B Siverson
Donald C Richardson (J)

STUDENT CHAPTERS

Lowell Technological Institute

Ram B Patel (S)

Bradford Durfee College of Technology

John A Bond (S)
Paul Braz (S)
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Abstracts

Specialty Versions of Standard Fibers

Anon, *Man-made Textiles 37, 76, August, 1960*

The author reviews some of the recent developments in new synthetic fibers.

Type 72 *Orlon* was announced by Du Pont in June. It is intended especially for use with cotton. Compared with Type 25, it is made in a finer denier and produces a "brighter, softer and smoother yarn." It is expected to be used in underwear. No bleaching is required.

Du Pont has patented four "trilobal" fibers, commonly known as "glitter" fibers: *Antron* Type 560 nylon (for apparel), Type 90 nylon (for locknit and hose), Type 501 nylon (for rugs and carpets), and Type 62 *Dacron* (for blouses, dresses and sportswear).

Chemstrand has introduced a "multi-lobal" nylon fiber *Cadon*, which is said to be similar to *Antron*.

Lycra, Du Pont's spandex fiber, is being used at present in foundation garments. Girdles made of nylon-covered *Lycra* are said to be light and cool and to possess stretch properties superior to rubber, besides being more durable. *Lycra* was formerly known as *Fiber K*.

Merinova, an imported Italian regenerated protein fiber, will find applications in blends with acrylics, and perhaps in knitted outerwear, it is said.

Zefran, Dow's acrylic fiber, is offered for uses in blends with wool and nylon. It is handicapped by its inability to be spun into a high-bulk yarn. However, *Zefran-blend* yarns have been developed for knitting, using a textured nylon core, which it is expected will adequately simulate the bulking action of other acrylics.

Fortrel is a polyester fiber, identical with *Terylene* and *Dacron*, which is to be marketed shortly by Fiber Industries, Inc.

The Celanese Corp has had much success with its triacetate fiber *Arnel*, and recently took over the production of the Goodrich Co's dinitrile fiber *Darvan*.

•

The New Rayons

Hearle, J W S, *Man-Made Textiles 37, 42-7, Sept, 1960*

Following the tremendous improvements which have been made in the strength of industrial rayon yarns, competing with nylon for the tire-cord market, the research effort of the rayon producers has turned towards the production of fibers which will give a crisper hand and better dimensional stability in dress fabrics in order to compete more strongly with cotton.

The new rayon fiber, according to one producer, combines most of the desirable properties of rayon and cotton and essentially eliminates the shortcomings of both. It has the dimensional stability and good wearing qualities of the natural cellulosic fiber and it also has the uniformity of a manufactured fiber as well as a controlled luster.

In the process of making ordinary rayon the cellulose molecules are regenerated and crystallized in the unoriented state. After the subsequent stretching, to align the molecules, the fibers have large crystalline regions separated by large disorganized amorphous areas.

Much better results are obtained when the orientation of the long-chain molecules (by stretching) occurs before the cellulose is regenerated and can crystallize. This produces a final structure containing a large number of small crystallites rather than fewer large ones; the non-crystalline regions also tend to be more highly oriented. The result is a greater resistance to extension and better stability, and the swelling is reduced.

Another essential feature of the new process is the maintenance of a high degree of polymerization in the viscose.

The author gives details of the methods of production of several of these new rayons: *Z54* polynosic fiber (a European product based on Japanese patents), *Zantrel* (Hartford Fibers Co), *Fibers SM27* and *SC28* (Courtaulds), and *Avril (Fiber 40)* (Am Viscose Co).

Other new rayons described are *Avlin* (Am Viscose Co), which has an unusual multicellular structure, and *Corval* and *Topel* (Courtaulds), in which the structure is stabilized by cross-linking of the molecules.

Incidentally, the manufacturers of these new fibers are said to be trying to avoid the use of the word "rayon", which "does not always have favorable associations".

•

Dyeing and Finishing of Triacetate Fabrics

Anon, *Dyer 123, 185, 187, Jan 29, 1960*

Dyeing and finishing of fabrics made from triacetate yarn is to some extent governed by the type of fabric and the end-use. In general terms, it is possible and practicable to carry out successfully processes on the heavier fabrics which would damage the lighter-weight fabrics, eg, those designed for lingerie.

Embossing may be taken as an example; pre- or post-embossing may be carried out to full depths on the heavier fabrics, but a milder treatment should be given to the lighter fabrics; otherwise an undesirable and significant loss in strength will be caused.

Similarly, heat-setting treatments should be designed so that they leave the fabric with the desired properties for its recovery from creasing and a safe ironing temperature, at the same time retaining adequate strength and extensibility.

In the case of very light-weight fabrics, pre-embossing should be carried out at the minimum temperatures required to give adequate depth and permanence. The fabric should be well steamed before entering the nip, and the embossing bowl should be polished. By contrast, the nip should be positive, and any suggestion of slip eliminated.

Dyeing should be carried out at high temperatures, if possible in a wide shallow-draught winch. There is less danger of complications if carriers are avoided, but where they are absolutely necessary, the greatest care should be taken to remove them prior to drying, which should be at moderate temperature.

At this stage the fabric should be given a prolonged steaming in order to develop the required degree of crease recovery, particularly wet crease recovery.

In processing the heavier fabrics, particularly the spuns, the writer states that they may be dyed on a jig or winch, according to type, but significant warp tension should be avoided on the jig, especially when the temperature has been raised. Dyeing should be carried out under enclosed conditions, and the bath should be cooled before removal of the fabric on completion of dyeing.

In most cases it is preferable to heat-set after initial relaxation and removal of size, and prior to dyeing. In the case of fabrics made from blend yarns of viscose and triacetate it is possible to combine the setting and curing process during a crease-resist treatment.

When fabrics contain a high per-

centage of triacetate and are required in white and pale shades, it is helpful to give an antistatic finish to reduce dirt attraction.

•

Recent Developments in the Dyeing and Finishing of Hosiery

Trotman, E R, *Dyer 123, 985, 987, 989, June 17, 1960*

The outstanding characteristic of the dye industry in recent years has been the replacement of the natural and regenerated fibers by their truly synthetic rivals. This change, the writer states, has raised a host of problems" for the dyer and the dyestuff chemist.

Nylon can be dyed with the same dyes that are used for wool because, like wool, nylon contains basic groups capable of combining chemically with the acidic wool dyes. Since chemical combination has taken place, the dyeing is fast to wet treatments, such as washing. On the other hand, the writer states, dyers have never yet succeeded in making nylon uniform with regard to the basic groups which it contains. There are variations from batch to batch, brought about either in the original production of the polymer or by subsequent heat treatment, such as crimp setting. These differences in the basic group content confer varying affinities for acid dyes.

Nylon can be dyed uniformly with the disperse dyes. In this case no chemical combination occurs, and the dye is retained on the fiber by forces which are essentially physical in nature. As a result, the wetfastness is inferior, especially in heavy shades.

Thus, for the last ten years, the dyer has had to choose between fastness accompanied by shade variations and uniformity of color at the expense of wetfastness.

A new range of dyes, known as the Procinyls, is now available. These are disperse dyes capable of combining chemically with the nylon fiber. Thus they are absorbed initially by physical forces and are therefore not sensitive to variations in the chemical nature of the fiber, and can still be given the fastness of acid dyes by an additional treatment which produces the chemical union with the fiber.

Unfortunately, these Procinyl dyes are of little use for the acrylonitrile fibers (eg, Orlon and Courtelle), because they behave merely as disperse dyes for which these fibers have little affinity. With Acrilan, however, fairly satisfactory dyeings can be obtained.

The writer also refers to the Procion reactive dyes which, he states, represent an important advance in the dyeing technique for bright shades of good fastness on cellulosic fibers. They have not been used on cotton and rayon footwear, he says, because of the problem of the liquor ratio; the dyes are expensive and do not exhaust well. Shades can only be produced economically, therefore, when the ratio of liquor to goods is small, eg, in package dyeing.

Continuous dyeing and finishing of hosiery is also discussed, and several modern machines for this purpose are described.

•

Paper Chromatography of Synthetic Dyes

Brown, J C, *J Soc Dyers Col 76, 536-42, Sept, 1960*

"Paper chromatography" is a technique used for the identification of dyes in mixtures. In the present paper its application to disperse, direct, acid, and metal-complex dyes is discussed.

The author describes two methods of producing paper chromatograms, using sheets of filter paper. In one method, the paper hangs vertically from a glass rod and the bottom of the sheet dips into a suitable "eluent" liquid in a glass tank. This produces an "ascending" chromatogram, as the eluent creeps up the paper by capillary attraction. In the other method, the paper is held at one end in a glass trough, and hangs downward. The eluent is placed in the trough and flows down the paper, producing a "descending" chromatogram.

The dyes to be examined, in concentrated paste form, are previously applied to the paper as spots or bands near the point where the eluent first wets the paper. The eluent, as it passes the dyes, dissolves them and carries them up or down the paper (according to the method used), leaving colored stains (of individual dyes in a mixture) on the paper at intervals which are later measured.

A special eluent is required for each class of dyes. In the case of disperse dyes, four different eluents are proposed.

The author gives full details of the various processes and eluents employed, illustrated by typical examples.

The same technique can be used for the identification of mixtures of dyes on the fiber. The dyes are first stripped from the textile by a suitable solvent, and the solution is concentrated by evaporation. It is then applied to the paper in the manner already described. Each fiber requires a different solvent.

Forty-one references to the literature are cited.

Characteristics and Changes in Mechanical Properties of Fabrics of Cellulosic Blends

Thomas, H A, *Can Textile J 77, 47-52, 55-60, July 22, 1960*

Regenerated cellulosic fibers, with improved physical and mechanical characteristics compared with the viscose rayon staple first marketed in 1918, are now available for the textile technologist to produce fabrics to specifications covering a wide range of requirements.

There are both economic and technical reasons why viscose rayon staple and cotton should be blended. The fact that both fibers are forms of cellulose explains their compatibility in processing, dyeing and finishing.

In addition to being compatible, however, cotton and viscose rayon staple are also complementary to one another in certain respects, eg in tenacity when wet and dry. The increase in strength of viscose staple rayon on drying below 65% r h offsets the reduction in strength of cotton, just as the increase in strength of cotton on wetting compensates for the reduced strength of viscose rayon, when blends of the two fibers are wet. Repeated wetting or washing and drying appears to have a profound effect on cotton fibers, causing embrittlement and loss of fiber as in towels, whereas viscose rayon staple does not suffer this type of deterioration.

Intimate blends of the two fibers in yarns and fabrics result in increased durability and improved performance compared with either 100% cotton or 100% viscose for certain cloth constructions and end-uses. In such instances the explanation is usually to be found in improved regularity and smoothness of yarn and fabric surface, flexibility (resistance to flexural fatigue), extensibility, moisture absorption (water of imbibition), and improved resistance to organic acids (eg, from perspiration) of viscose staple compared with cotton.

Additional advantages which viscose rayon staple contributes to the blend with cotton are:

1) A higher degree of perspiration absorbency.

2) Price stability.

3) Improved spinning, weaving or knitting efficiency.

4) Fast colors (by use of "spun-dyed" rayon).

5) Improved resistance to abrasion when dry.

6) Softer draping qualities.

7) Less tendering on treatment with resins, eg, urea-formaldehyde,

for crease, shrink and stretch resistance and minimum ironing.

8) Ease of washing, dirt being more readily removed from the smooth rayon fibers than from the convoluted and hollow cotton fibers.

The author suggests a number of uses for viscose/cotton blends in household textiles, clothing, and medical and surgical dressings. He describes various laboratory tests in which rayon/cotton blends are compared with all-cotton fabrics.

Several important papers related to this subject are cited.

BOOK REVIEW

Per Capita Fiber Consumption Levels

United Nations Food and Agricultural Organization
Commodity Bulletin Series No. 31
Rome, 1960

Aside from the brief introduction and explanatory notes, this is a compilation of detailed statistics on the production, exports, imports and consumption of textile fibers, covering the period 1948-1958. Most of the book is devoted to the amount of fiber "available for home use", the term used in this publication. This is calculated by taking the mill consumption of each natural fiber by country, subtracting the exports, and adding the imports. The figure is given in millions of tons and compared with the population of the country in question. In the case of synthetic fibers, the production figures are given in place of the mill consumption figures. Export and import data are broken down by types —tops, noils and waste, yarn, tissues for wool—staple, yarn and tissues for synthetic fibers. Standard conversion factors and exceptions by country are given in an appendix. All terms in the book are in English and French with a Spanish glossary—JVK

•

"LEXICON Textilveredlung und Grenzgebeite", a dictionary for textile finishing and related fields

Edited & published by C-H Fischer-Bobsien, Duelmen-Daldrup, West Germany.
2nd Edition—1960.

A thick book of 2400 pages, paper, —coarse, binding,—washable boards. An ambitious effort in defining all terms used in textile finishing, which in this sense includes all phases of wet handling of textiles, and including listings of all textile fibers, dyestuff names, textile auxiliaries and chemicals, as well as a register of trade journals, dyehouses, print shops, finishing machines, etc.

Some of the articles attempt to describe application methods for dyestuffs, as for example, acid dyes on wool and other fibers, Indigosols in dyeing and printing, such information appearing necessarily sketchy for a volume devoted to such a broad field. Entries for such varied and widely dissimilar topics as chromotrop, cis-trans-isomerie, colloid, coulomb, Colorfix, cretonne, Crocein, cupro-ion appear, but it is noteworthy that the definitions are clear and generally accurate.

There are a surprisingly high percentage of English and American words in the listing. In entering the morass of names of dyes and auxiliaries, the editor must expect many omission and some errors. On casual examination it is seen that Fastolite is listed, Fastusol is not, Corval and Topel are listed but Zantrel and Avril are not, Colorspun and Jetspun are given, Coloray is not. Among the dyestuff firms, American Aniline Products is listed, Koppers Company, Inc is not; similarly we do not find Putnam or Carbic-Hoechst.

Other entries can stand correction. We noted Dri-smoock for Dri-smooth, Solanthine for Solantine, Tanalon is attributed to DuPont and Zeset is called a stiffening agent.

Surprisingly complete are the types and origins of the newer fibers. Also the drycleaning methods therefor. American launderers will be interested.

The book is truly international in scope and should be on the handiest shelf of those whose chemical and textile horizons are not limited by the adjacent walls.—HPB.

The Physical Chemistry of Surfaces

Author: A W Adamson
Price: $12.75
Published by: Interscience Publishers, Inc (1960)
250 Fifth Ave,
New York 1, NY
pp: 629 inc 12 pp of Author's Index, 16 pp of subject index

The field of surface chemistry has developed tremendously in the last few decades leaving Prof N K Adam's third edition of the *Physics and Chemistry of Surfaces* (1941), Prof E K Rideal's *Introduction to Surface Chemistry* (1930) as well as the late Prof William Harkin's book *The Physical Chemistry of Surface Films* (1953) slightly out of date. The stage has been set for a new, up to date, comprehensive text and such a text is Prof Arthur Adamson's *Physical Chemistry of Surfaces.* Because of the great amount of literature that has been published in this field it has been impossible to find an up to date, critical and coherent development of the numerous topics concerned in any one place. Dr Adamson has filled this need by providing a guide to the important contemporary work that can serve as a point of departure for the investigator and scientist. This text has grown out of a course the author has been giving for years at the University of Southern California and its early chapters are accompanied by exercises to test and strengthen the reader's understanding of the fundamentals in the field. Each chapter is well illustrated and is accompanied by adequate references to the literature. Physical and chemical adsorption, wetting, flotation, detergency, emulsions, and foams are some of the topics that are treated in this work. The book is a welcome addition to the literature of this rapidly growing field of investigation.

SPECIAL NOTICE

In order to expedite printing schedules during the holiday season, publication of the Annual Index by Subject and Author for Volume 49 (1960) will be deferred until the January 23 issue.

DECEMBER DUO
1960

Inter Alia—Inter Nos

P J WOOD

LADIES HOSE

Looking through a magazine published in Belgium, we came across an abstract from an English periodical we never see. It had a few sage remarks and prophecies on the subject named.

The Belgian publication, Rayonne & Fibres Synthetiques, is the official organ of the "International Committee of Rayon and Synthetic Fibers". It frequently quotes opinions from sources with which we seldom come into contact. Financial Times is one of them.

This authority reports that the British sold 245 million pairs of ladies stockings last year, of which 95% were made of nylon. Estimating the wearers at 20 million persons, this works out at an annual consumption of 11.2 pairs per capita. During the first quarter of this year the consumption has increased 10% over that of last year; if this rate continues throughout the entire year these 20 million women will have bought and used (and probably paid for) 12.4 pairs of nylons per year.

The American woman uses an average of 12.1 pairs during the year; we would have placed the figure higher than that until we recollected the number of bare-legged ones we see around all summer, which is as much a crime against the hosiery manufacturer as going bareheaded is against the hatter.

In groups of all ages, the stockings made of 30-denier nylon are losing ground to those made of 15-denier. Even the girls in the older groups, 45 and over, who formerly used crepe and service weight rayon stockings, are coming around to the sheer nylons. This will not cause the hosiery maker to weep much—they will undoubtedly wear out sooner than the heavy yarn types.

PRODUCTION

It will be some time before figures are available showing what production of bleached, dyed, printed and finished textiles has been during the present year, but, thanks to the Department of Commerce, Bureau of the Census, we now know how last year compared with the year before.

In 1959 a total of 10 billion 179 million yards of cotton, silk, and rayon and other synthetic fabrics were finished. This is an improvement of 8% over the production in 1958 and is 4% higher than the 1947 figures.

The details are: 3,688 million yards bleached and finished white, 4,275 million yards dyed and finished, 2,236 million yards printed and finished.

WOOL WELFARE

It pays to give woolens (and wives) extra special care -- they last longer -- they look well longer.

The old adage "the hotter the liquor, the better the wash", may well apply to fabrics made of fibers other than wool, but not to wool.

Fine woolen sweaters and similar garments should be washed in warm water -- the old-fashioned word is lukewarm -- the older fashioned word, milkwarm, a word going back to the time before refrigerators were, when the farmer who didn't keep cows sent his progeny to the neighbor who did, right about milking time; said progeny's job was to hurry back right smartly and get that pail of milk-warm lacteal fluid back home and lower it down into the well to cool it to a keeping temperature and keep it there.

A neutral soap is best for good quality wools; after this mild scour, the temperature of the bath should be changed very gradually by letting off part of the warm scouring soap and replacing with cooler water. This stunt is repeated several times until the last water is really cold.

In this way the wool fiber is protected from the shock of going from hot to cold water, which doesn't do wool any good. Likewise the article should not be wrung out severely, as one can do with a cotton garment, but pressed lightly, then wrapped in a clean towel and subjected to the lightest wringing possible, then spread out to its original shape on a dry towel and allowed to dry in the air, with no application of heat. It takes longer, but the difference in hand of a sweater so treated is easily discernible and will be highly appreciated.

Whites keep their whiteness better, colors keep that fresh new look.

OPTIMISM

Our sister writes that there is an old lady in Chapeltown, near where she lives, who is eight months over 100 years old, lives mostly in bed, but still very lively. Sis says that she just had a new complete set of dentures made, and uses them very happily. That's what we call being really forehanded.

SUCCESS & FAILURE

Success is not final and failure isn't fatal - if you have courage.

FASHION NOTE

You are never fully dressed until you wear a smile. - Courtesy of Williams & Son

ECHO OF THE PAST

When we read these lines, said to have been uttered by Harry A Toulmin Junior at a conference on National Inventions and New Products in the Cleveland Engineering Center, we remembered the speaker, who is the chairman of Commonwealth Engineering Co in Dayton, Ohio; we also remembered his very original way of expressing his ideas. Here is the short passage that caught our eye,

> "Americans are fat between the ears. We build fancy buildings, stuff them with PhD's and kill off research. We think we can get intellectual achievements by big buildings. . . . . A hungry belly is the best incentive for invention".

Two things we remember about this man: 1) he wrote a book on the subject of "International Contracts"; 2) he was the principal speaker at the first night dinner at the October 1947 AATCC convention in Chicago. We ought to know -- it was our job to introduce him. The subject: "An Industrialist's Patent Policies".

Here's a free sample of his talk of that night:

> "Now if the Government is willing to give you a monopoly for 17 years, and is willing to let you fix the price of your competitor so he can't undercut you, by the simple expedient of giving him a license and controlling his methods of operation, I think that is a gift from Heaven and should be taken advantage of. When patents are approached from that practical point of view, I have seen many industries converted from a cutthroat, loss-competition, to one of rich and lasting profit; and if the management of such groups is intelligent, it will be careful not to impose upon the public but to give it a fair price, and to continue the public interest by contributing a great deal to research and development work".

Bob Bonnar followed with "Gearing Toward Better Textiles".

A STATISTIC

According to the Bureau of the Census of the Department of Commerce of the United States, and they are generally right, one yard out of every 10 yards woven in this country in 1958 contained two or more fibers.

TRUTH

"Nothing persuades and sells like the truth". Good Housekeeping said it in an advertisement in Printers' Ink. We found it. If we were asked to improve on this, we would add, and good taste.

SUGGESTION

Southern Textile News names the office drinking fountain OLD FACEFUL: how about OLD EARFUL?

THIS DAY

> Yesterday is but a dream
> And tomorrow is only a vision
> But TODAY WELL LIVED
> Makes every yesterday a dream of happiness
> And every tomorrow a vision of hope. -- From the Sanskrit.

CREDIT

There is no limit to what can be accomplished if it doesn't matter who gets the credit. -- Ralph Waldo Emerson

CHEAPER BY THE DOZEN?

In Inside Business we read "A supermarket in Los Angeles is selling Ford Falcons by the pound. Bought that way, it seems, Falcons are cheaper than coffee". Wonder if they give trading stamps with them?

DOGS

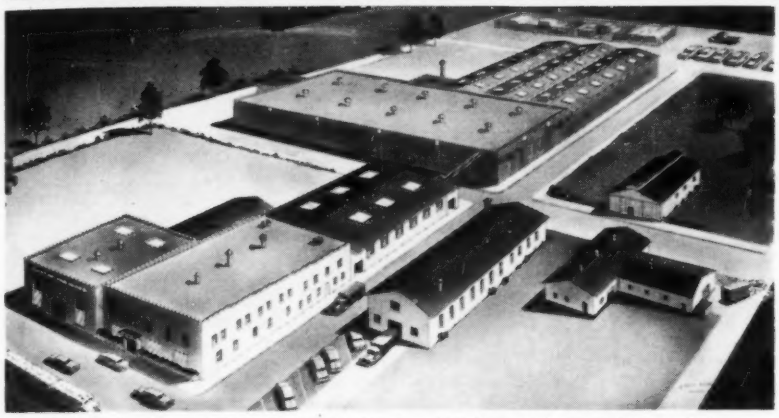
The best breed of dog we know is the hot dog -- it feeds the hand that bites it.

PROPHECY BC 740

"For unto us a child is born, unto us a son is given; and the government shall be upon his shoulder; and his name shall be called Wonderful, Counsellor, the Mighty God, the Everlasting Father, the Prince of Peace."

"Of the increase of his government and peace there there shall be no end." Isaiah IX 6 -- QEF

News of the Trade



Artist's drawing of Gaston County Dyeing Machine Co's expanded facilities

Gaston County Dyeing Machine Co Expanding

With the completion of a large and modern fabricating plant plus additions to machine shop and engineering departments in 1958, Gaston County Dyeing Machine Co anticipated that floor space would be sufficient for at least 10 years of growth. Less than three years later a large addition to the fabricating plant is well under way and will be completed early in 1961. Total floor space in five buildings will then total 85,000 square feet.

The Stanley, NC, company is reputed to be the world's largest producer of pressure dyeing and drying machinery for the textile industry. It is also an important supplier of process tanks, pipe and custom-built equipment for the chemical industry. Its products are sold in 28 states of the United States and in 16 other countries.

The new facilities will be used mainly for fabrication of products for the chemical industry since all existing plant space is needed for production of textile dyeing and drying equipment.

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50th NRMA Convention

"Retailing Serves America," is the theme around which the 50th annual convention of the National Retail Merchants Association will build its Golden Anniversary salute.

The NRMA convention, with an expected attendance of over 5,000 retail executives, is scheduled for Sunday, January 8, through Thursday, January 12, at the Hotel Statler-Hilton, New York.

$2 Billion Audience Anticipated for 45th KAE

Companies displaying their inventions and new products at the 45th biennial Knitting Arts Exhibition, next April 24 in Atlantic City, NJ, will face a $2 billion audience, it is predicted.

The 13,000 anticipated attendance at the four-day exhibition will represent firms from the US and foreign knitting industries which will spend approximately $2 billion during 1961-1962 for the types of materials, equipment, supplies and services on display. The estimate was made by the National Association of Hosiery Manufacturers, National Knitted Outerwear Association and the Underwear Institute, which are sponsoring the KAE—world's largest knitting industry trade show.

More than 200 firms will unveil latest advances in dyeing equipment, knitting machinery, packaging machinery, chemicals, dyestuffs, laboratory equipment, textiles, yarns, power apparatus, mill equipment, motors, as well as other products and services utilized by the industry. The KAE will be held in Convention Hall.

The American knitting industry produces annually 2 billion pairs of hosiery, a billion underwear items, 800,000,000 outerwear items, and 80,000,000 pounds of knitted fabrics.

Packaged Air Make-Up Units Replenish Bleachery Air

Graniteville Co, Graniteville, SC, has recently installed four "packaged" air make-up units to replace air exhausted to atmosphere by bleachery processing equipment. Three of these make-up units can be seen in Fig 1.

The air make-up units are of a relatively new standardized design and were supplied by the Atlanta office of the J O Ross Engineering Division of the Midland-Ross Corp, New York, NY.

Figure 1

Three of four 60,000 cfm air make-up units in the Gregg Division of the Graniteville Company, Graniteville, S C.

Some 1,000,000 cfm are said to be exhausted by dry cans, mercerizing ranges, wash ranges, resin curing ranges, and other bleachery equipment, and 35 to 40 exhaust hoods, such as the Ross hoods illustrated in Fig 2, continually discharge this processing air to atmosphere.

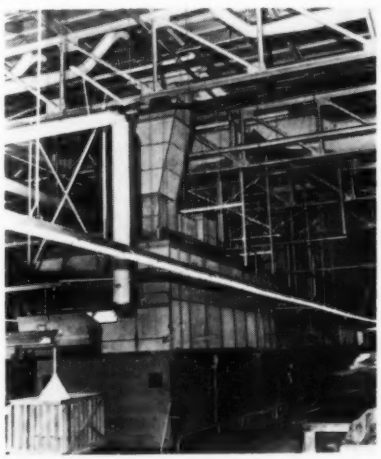

Figure 2

Typical hooded process which exhausts room air to atmosphere. Hood, ducting and exhaust fans are by J O Ross Engineering. There are some 35 to 40 similar exhaust hoods in this room discharging a total of nearly 1,000,000 cfm to atmosphere.

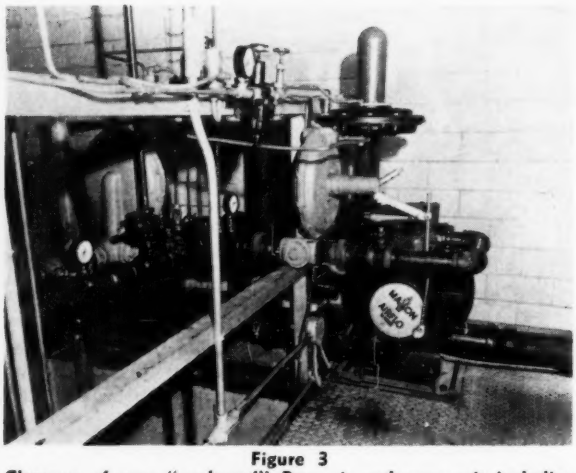

Figure 3
Close-up of new "packaged" Ross air make-up unit including fan and heater inclosure, fuel and air supply equipment, and the back of the control panel.

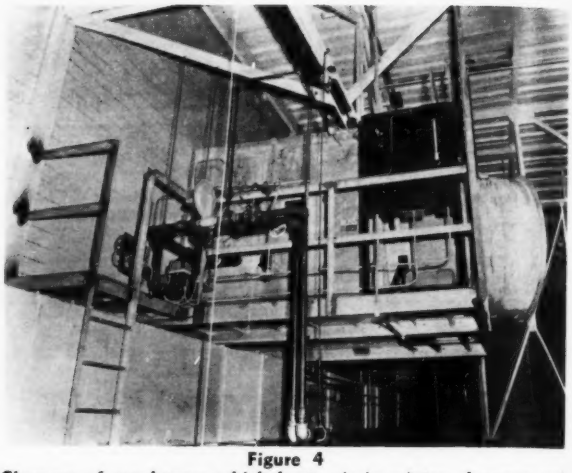

Figure 4
Close-up of gas burner which heats air in winter. Louvers and shut-down dampers are shown behind burner.

Of the 1,000,000 cfm exhausted, it is reported that only about 60% is replaced by heating and ventilating systems and by the circulation system designed to prevent condensation on the ceiling. Without an additional air supply, this loss of air reportedly would produce a negative pressure and cause drafts at doorways and windows as air tried to rush in to replace that which was exhausted. Exhaust fans also would have to work harder. Their work could be likened to drawing air from a bottle.

The new "packaged" make-up units are said to supply 60,000 cfm each, and bring the total replacement air up to 80% of that exhausted. This is reported to be more than adequate by engineering standards, and allows for additional processing equipment before additional make-up capacity will be required.

One of the new make-up units is shown close-up in Fig 3. It comprises a 7′-high × 7′-wide × 8′-long galvanized enclosure equipped with two access doors. The end of the enclosure which fits into the outside wall-opening is fitted with louvers, bird screens and shut-down dampers. The other end is equipped with an axial fan which draws from out-of-doors and directs it into the bleachery.

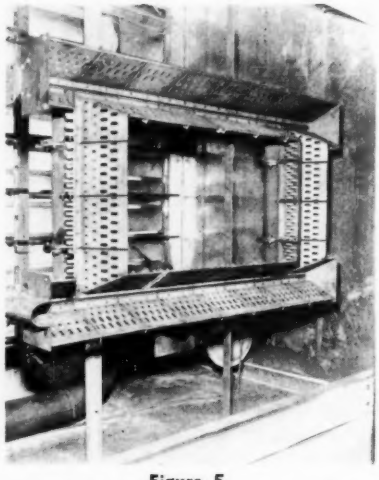

Figure 5
Close-up of fuel supply equipment including gas-air mixing unit, valves for regulating gas and air supplies, safety equipment, air supply fan, etc.

Fig 3 also shows fuel supply equipment that regulates fuel and air to internal burners which heat incoming air in the winter. The make-up unit is insulated with a 3″ thickness of rock wool all around to prevent wintertime condensation. Natural gas with propane as stand-by is used as the fuel, largely because of lesser maintenance requirements in comparison with steam. To the right in Fig 3 is the back of the control panel which contains, among other things, an indicating controller which automatically controls fuel to the burners so that outside air will be brought up to as high as 80°F. The air make-up unit is mounted near the ceiling, some 18′ above the floor.

Fig 4 shows a close-up of the burner and also shows the louvers and shut-down dampers in the end wall. Fig 5 shows a close-up of fuel and air lines, control valves, safety devices and gas-air mixing devices for accurate control of incoming air temperatures.

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NEOVADINE® AN is a liquid product, stable to acids, alkalis, and hard water. It is particularly effective in stripping faulty dyeings on wool and nylon. NEOVADINE AN increases the color yield in dyeing Cibacrons on wool and helps in the production of deep, level shades. NEOVADINE AN eliminates tippy dyeings on wool and will also remove loose color and result in better whites in the printing of cotton. Write for detailed technical folder. CIBA Company Inc., Chemical Specialties Division, Fair Lawn, N. J.

CIBA WHERE RESEARCH IS THE TRADITION

• NAMES IN THE NEWS •

O'Neil

Brown

O'Brien

Lindley

John J O'Neil Jr, formerly with Dow Corning Corp, has joined Soluol Chemical Co, Inc, Natick, RI, in the capacity of sales manager, effective December 1.

In his prior connection with Dow Corning from 1953 to his present change, Mr O'Neil was responsible for technical sales, research and development of silicone products involving water-repellents, finishes, coatings, impregnants, etc, in the New England area.

Soluol, in addition to specializing in products and processes for the manufacture and finishing of textiles, is a Syl-mer licensee, and has been a pioneer in the development of silicone water-repellents, defoamers, softeners, and release-agents. The addition of Mr O'Neil to the Soluol staff further emphasizes its position in development, sales and technical service of silicone products.

●

Richard A Reck has been appointed chief chemist of Armour Industrial Chemical Co. He succeeds the late *Vernon Franklin*.

Mr Reck has been with the Company since 1945. In his new position, he will have responsibility for the McCook (Ill) Control Laboratories, issuance of specifications on all products and approval of product shipments and incoming raw materials.

Bradford Dyeing Association, USA, has appointed *Robert O'Brien* to the position of general sales manager in charge of the New York office. Mr O'Brien has served as sales manager since 1956.

Immediately upon his appointment, Mr O'Brien selected *Joseph Brown* to serve as assistant sales manager. Brown has been a member of Bradford's sales staff since July, 1959 and has served in a variety of capacities with the firm since June, 1933.

●

The board of directors of United States Rubber Co has designated *Earle S Ebers* as group vice president in charge of the polymer, fiber and chemical operations of the company. Mr Ebers had been vice presiden and general manager of the company's Naugatuck Chemical division.

In his new post, Mr Ebers will be responsible to the president for the operations of the company's textile, plantation and Naugatuck Chemical divisions as well as Latex Fiber Industries, Inc, a subsidiary.

At the same time, the board elected *Dudley Chittenden* a vice president of the company and appointed him general manager of the Naugatuck Chemical division to succeed Mr Ebers. Mr Ebers has served as manager of Marvinol vinyl resin operations since 1958.

Putnam Chemical Corp has announced the appointment of *Paul Lindley* as sales representative.

Mr Lindley was formerly associated in the same capacity with American Cyanamid Co, and previous to that as purchasing agent for Burlington Industries.

Mr Lindley will work out of Putnam Chemical's Southern office in Charlotte, NC.

●

Emil C Hansen has been retired by General Aniline & Film Corp and is now connected with Food Machinery and Chemical Corp in a consulting capacity.

A graduate in chemistry of Pratt Institute, Brooklyn, NY, Mr Hansen served in the textile dyeing and finishing industry from 1917 to 1933 as a chemist and colorist. He joined GAF in 1933 and served as laboratory manager, assistant to the technical director, and market manager of textiles.

Mr Hansen has been very active in the technical affairs of AATCC. As a member of the Technical Committee on Research, he has served as chairman of the Committee on Simplified Control Tests (1955-6), chairman of the Committee on Raw Wool Scouring (1957-8), and a member of the Committee on Water Resistance of Fabrics.

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Non-ionic fluorescent brightener effective on many fibers.

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CLASSIFIED ADVERTISEMENTS

Advertisements in this section are restricted to HELP WANTED — POSITION WANTED — EQUIPMENT wanted or for sale. Rates, effective February 1, 1951; One-time, $14.00 per column inch; 13 or more times, $12.00 per column inch: Position Wanted, $4.00 per column inch. Figure 38 average words per column inch. Publisher reserves the right to reject or discontinue any classified advertisement. Replies should be addressed: Box Number ..... c/o American Dyestuff Reporter, 44 East 23rd Street, New York 10, N. Y.

• SERVICES •

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• OPPORTUNITIES AVAILABLE •

WANTED: Textile Color Manufacturer has position available in Metropolitan area for man qualified in application and development. . . Replies will be held in strictest confidence. Address all replies to Box No. 988

WANTED: DYER—to supervise dyeing, gilling and blending of wool and wool/nylon top. Give experience and salary desired. Location: Philadelphia. Write Box No. 994

WANTED: EXPERIENCED SALESMAN—by old established manufacturer for the Carolinas. Prefer one with plant experience in application of either vats, sulfur colors, naphthols or azoic printing colors. Please give resume of education and past employment. This will be held in strict confidence. Our staff knows of this advertisement. Write Box No. 995

WANTED: PACKAGE DYER—of Orlon and other synthetic fabrics. Thoroughly experienced. Salary commensurate with ability. Unlimited opportunity depending upon the imagination and capability of the individual. This outstanding company located in New York City vicinity. All replies confidential. Write Box No. 998

• OPPORTUNITIES AVAILABLE •

WANTED: Two men for progressive pigment company. One to help set up Southern lab, one for general lab work in Metropolitan area. Salary commensurate with experience and ability. Excellent opportunity for advancement. Reply in confidence. Write Box No. 102

WANTED: DYER AND ASSISTANT DYER—for new jig plant starting 50 miles from New York City. Salary commensurate with background and experience. Send resume. Write Box No. 104

WANTED: Midwest hosiery mill requires man to assist head dyer. Laboratory experience necessary. State age, experience, and salary expected. Write Box No. 105

• PERSONNEL AVAILABLE •

POSITION WANTED: TEXTILE CHEMIST B. S. Degree with 9 years experience in dyeing, printing, finishing of woven and nonwoven fabrics and tufted carpets. Formulation experience in latices and synthetic resins. Seeks position in application research of fiber, resin or latex producer. Write Box No. 992

POSITION WANTED: CHEMIST AND DYER—Broad experience all phases textile processing. Good background as a technical salesman. Desires position as a Technical Representative for Latin American countries. Fluent Spanish and English. Write Box No. 103

POSITION WANTED: SALES—Thoroughly experienced in sales, technical services, and development of textile specialties. Currently traveling Piedmont Section. Desire responsible position in sales or sales management. Write Box No. 106

Berard

W Norbert Berard, research scientist at the USDA's Southern Utilization Research and Development Division, New Orleans, La, has been appointed to represent the Southern Division at the U S Army Quartermaster Research and Development Command at Natick, Mass, where he will make his headquarters.

Mr Berard will conduct a program of cotton research, both chemical and mechanical, in cooperation with Quartermaster scientists, on the application of U S Department of Agriculture textile research to military uses. He will be working closely with *Stephen J Kennedy* and his associates in the Textile, Clothing and Footwear Division of the Quartermaster Command, and will be responsible for translating military textile requirements into terms that will enable the Southern Division to include them in its research program.

The two organizations have common research goals in certain areas—for example, flame-resistant cotton fabrics developed at the Southern Division in cooperation with the Quartermaster Research and Development Command. This closer cooperation with the military reportedly will enable the Southern Division to broaden its cotton research program which is designed to increase the utilization of cotton.

Mr Berard joined the staff of the Southern Division in 1941 and at the time of his new appointment was directing research on the chemical finishing of cotton fabrics.

Among Mr Berard's contributions to cotton research are the development of lead-chromate-treated cotton shade cloth now being made in large and increasing yardages for use by northern Florida tobacco growers; the discovery that certain vat-dyed, partially acetylated cotton fabrics have outstanding resistance to sunlight; and the development of the formic-acid-colloid treatment to give cotton outstanding rot resistance.

●

George A Slowinske, a supervisor of the Technical Laboratory of the Du Pont Company's Dyes and Chemicals Division, was recently named by the American Standards Association as the United States member of Working Group 1 on Waterproofness Testing of the International Standards Organization Technical Committee 38.

Mr Slowinske has held a number of assignments in this field. He is now serving his fourth three-year term as chairman of the AATCC Committee on Water Resistance of Fabrics, and was recently appointed chairman of that organization's Committee RA-63 on Water Resistance. He is also a member of the ASTM Committee for ISO and foreign textile standards.

●

The appointment of *Richard E Nickerson as* manager of the textile dyes section of Du Pont's Dyes and Chemicals Division has been announced by the company. He succeeds *Harold L Sager,* who was recently named assistant manager of the New England district sales office.

Mr Nickerson joined Du Pont in 1947 as a sales trainee and since 1949 has been a salesman for dyes and chemicals in the Philadelphia district. He is currently corporate membership chairman of the Delaware Valley Section, AATCC.

Waldron

Appointment of *Arthur C Waldron* as New England District sales representative for the Virginia Smelting Co was recently announced.

For ten years prior to joining the Virginia Chemical sales staff, Mr Waldron gained technical experience selling industrial chemicals to the textile, chemical processing and paper industries.

Waldron and family will continue to reside in Hampton, NH.

OBITUARY

FRANKLIN FARLEY, 66, former president of the Chlor-Alkali Division of Food Machinery and Chemical Corp, died November 24 in Lakeland, Fla.

Mr Farley was born in Bellaire, O, and was graduated from the University of Kansas. He served as an engineer with the Washington Marine Insurance Company of New York, NY, and then with Arthur D Little, Inc, Cambridge, Mass. Later he was vice president of Phosphate Mining Co, New York, and vice president of International Minerals and Chemicals Corp, Chicago.

Mr Farley joined FMC in 1954. He served the company both as president of the Chlor-Alkali Division and, from 1957, as management consultant. He retired in September of this year.

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New cationic softener for Orlon* and modacrylic fibers

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SAPAMINE® PA offers excellent results on Orlon and modacrylic, polyamide, polyester, acetate and triacetate fibers. SAPAMINE PA can be applied at any stage of processing . . . by exhaust, pad and spraying methods. Let us send you the technical folder describing SAPAMINE PA in detail. Contains recommended formulations for above listed fibers according to method of application. CIBA Company Inc., Chemical Specialties Division, Fair Lawn, N. J.

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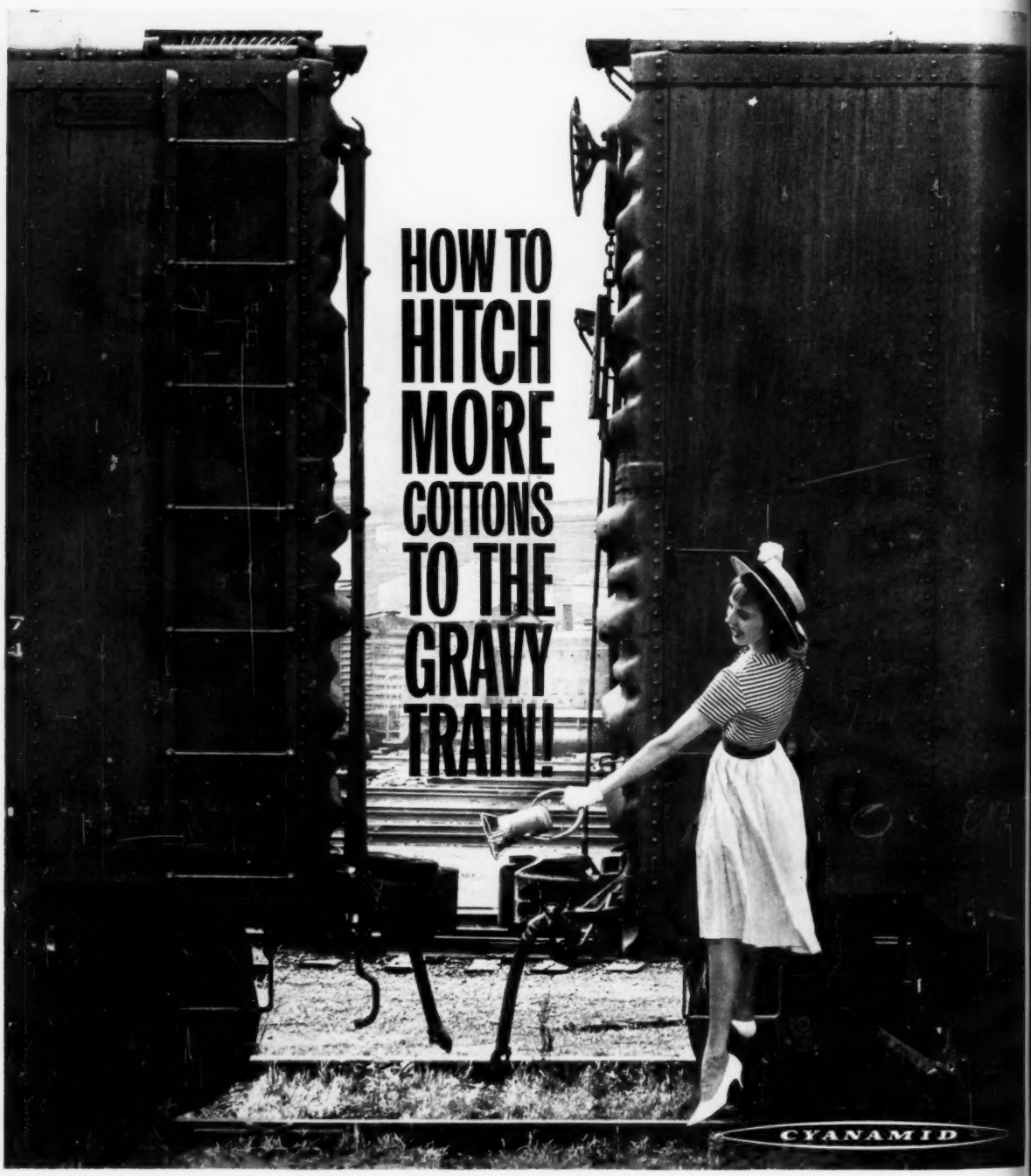

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